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SOME ACTUARIAL CONSIDERATIONS FOR MUTUAL COMPANIES

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ABSTRACT

This paper attempts to develop an actuarial rationalization for the governance of a mutual life insurance company. In doing so, it will respond to the following two general questions: (1) What are or should be the rights of a participating policyholder? (2) What general guidance should exist in directing the management of a mutual life insurance company? While there is some literature on surplus theory, distribution theory, and rights of policyholders, there is no unanimity, even among actuaries, as to what a mutual company is or how it should be operated in the best interests of those with a rightful interest in the company. Nor has an actuarial theory been put forth that defines precisely how much surplus is necessary or appropriate, how much growth can be justified, or how to wind up a mutual company.

After exploring policyholders' rights, this paper will state the author's views of what a mutual company is and will develop the associated actuarial considerations. The theory will respond to the major questions that have been raised with respect to mutuality; however, there will not be a comprehensive consideration of many of the practical questions. This will be left for subsequent development by others. In particular, the paper will not define precisely the optimum level of surplus for a mutual company, although it will include some of the criteria that should be taken into account. The paper does set out a proposal for surplus maintenance through specific charges to participating policyholders. It also considers the relationship between growth objectives and surplus targets.

The author's company, a mutual life company operating internationally and located in Canada, has within about the past ten years transferred portions of its business to other companies, while in the past year it entered into an agreement in principle to acquire a significant block of business from another mutual company. Some of the questions relating to these types of transactions will be examined within the context of the theory put forth in this paper, including that relating to the surplus and growth objectives of the company and the rights of the various groups of policyholders involved.

I. THE RIGHTS OF POLICYHOLDERS

Most mutual companies look upon their policyholders as "owners" of some kind. However, a policyholder's interest is not transferable and does not survive his participation as a policyholder. Most companies would deny him a beneficial interest in the net worth of the company.

There has been some recent interest in the rights of participating policyholders/owners with respect to their role in selecting directors and management, in determining divisible surplus, and in allocating the divisible surplus. Fortunately, the last two points were clarified in the United States courts some time ago, giving to management the right to determine divisible surplus and to allocate it among the participating policyholders. The law is not so clear on other matters governing the way in which the company is run, such as the use of proxies.

In North America it has been established that mutual companies should provide insurance at as close to cost as possible. After provision has been made for a small charge to surplus, the operating profits are returned as dividends to those groups of policies that contributed the profits. The determination of the amount of divisible surplus is the prerogative of management, while the allocation of that surplus is expected to follow principles similar to those in the recently exposed Draft Actuarial Opinion S-7. Thus there is considerable room for judgment by the management and actuaries of a mutual company in (i) establishing the proper nonrefundable contribution to maintain surplus, (ii) determining the amount of divisible surplus and the timing of its distribution, and (iii) allocating the divisible surplus among policyholders.

There are certain criteria that a reasonable participating policyholder might feel should govern the operation of a mutual company. These could include the following:

1. All participating policyholders should make a comparable and equitable contribution to the enterprise.
2. Changes in company growth rates should not affect policyholder contributions.
3. Differences in ultimate net cost should reflect differences in performance factors only.
4. Decisions by management, on the whole, should be in the interests of the participants.

Surplus is simply the excess of assets over liabilities. Many actuaries have suggested that the surplus of level premium policies is initially negative, is gradually repaid until a positive surplus is built up, and

then declines to zero or close to zero at maturity. This concept would seem to imply an identifiable policyholder interest in the surplus, presumably canceled (as a loan) for an early termination but refundable if positive after providing a small contribution to maintain the surplus funds. Actually, it is possible to structure a mutual company with a totally revolving surplus fund, in which the surplus at any given time represents the net prefunding of existing policyholders. If negatives could be treated as a debt, this surplus could be distributed equitably to the existing policyholders. Those who argue that policyholders are owners of the company must look upon the surplus somewhat in this way. If surplus exceeds this revolving fund, then it is not clear who has the rights to the remaining surplus, which must have been contributed by prior generations of policyholders.

The author contends that a mutual company should be looked upon as an enterprise set up to provide a risk-sharing and savings facility for its voluntary participants. The enterprise is a kind of trust fund, with participants having certain rights to their own net contributions (cash values) but not to those additional assets (surplus) required to maintain the trust. Policyholders select directors and management (in theory) to determine and protect their equitable interests.

A mutual company is expected to remain in existence for a very long time. During its existence many changes outside its influence will occur that will have a significant impact on its operations and even its character. These changes may include inflation, epidemics, wars, political and social changes, shifting family characteristics and needs, welfare programs, and changing approaches to marketing. The company must have the structured capacity to adapt to and anticipate change, and to change itself as the circumstances may suggest. Opportunities will arise and decline, and the company must act accordingly. However, the rights of policyholders and the charges made to policyholders to maintain the enterprise should remain essentially unchanged over time. To achieve this end, the company should set a surplus target(s), probably expressed as a ratio of surplus to liabilities, with due consideration of the risks involved. The surplus target is a goal to be achieved in the ultimate; each policyholder must make a contribution toward it. The actual surplus or surplus ratio at any given time will differ from the surplus target and will govern the current operations of the company and its ability to meet opportunity or to take risks currently.

Policyholders should not benefit from or be hurt by unusual situations, such as excessive growth or the decision to wind down an active operation. In fact, it is best to think of a required contribution from all

policyholders to maintain surplus, affected only by the nature or size of the risk involved. This contribution would not vary, whether the company is in a period of development, stability, or decline. While surplus targets and surplus maintenance charges should be set to remain essentially unchanged from inception to liquidation of the company, the surplus itself can and will vary over the years because of environmental factors and short-term decisions made by the company.

The policyholder will participate in the actual performance of the company according to the contribution by the block of policyholders to which he has been assigned. He was afforded the opportunity of participating in a viable organization and should leave behind a viable organization. It is perfectly reasonable that a small, nonrefundable surplus charge be made to the policyholder for his right to be a member of that organization for a limited period of time. This charge can be fixed for all policyholders if the company establishes a surplus target and sets a long-term growth rate that it feels is proper to maintain. The surplus target can be independent of the actual surplus held by the company at any given time and of the company's actual growth rate. These concepts will be developed in Section III.

In a way, there is little fundamental difference in ownership rights between a participating policyholder of a mutual company and a nonparticipating policyholder of a stock company. The actual difference in the contracts is that the former is entitled to insurance at cost as measured retrospectively by the actuary, while the latter receives his insurance at a cost estimated prospectively. Both should pay something for the use of someone else's capital and for the right to participate in a going-concern enterprise. The participating policyholders collectively may control the enterprise but should be permitted to make only those decisions (through the management) that maintain the organization essentially in a form that does not change their expectation.

II. SIZE AND PURPOSE OF MUTUAL COMPANY SURPLUS

The basis used to value the assets of the mutual company, the valuation method and bases for actuarial liabilities, and therefore the definition of surplus will vary from company to company. The right-hand side of the balance sheet provides a rather cloudy division between the internal liability of current policyholders and the statutory liability. In between are the liability for negative values and cash-value deficiencies, the margins for minimum statutory reserves, and often the further margins of net level premium reserves. The balance sheet also will include the investment reserves (MSVR), any contingency reserves, and the statutory surplus.

The following definitions will be used in this paper:

Internal liability: The fund accumulated from the net cash flow of all existing policyholders, that is, the experience asset share. The internal liability is sometimes referred to as the "realistic liability" and can be negative.

Statutory liability: The reserves and liabilities reported to statutory authorities. The reserves could be derived using net level premium or modified methods. The statutory liability is equal to the internal liability plus the margins deemed required to meet possible future adverse contingencies.

Internal surplus: Assets less internal liabilities.

Statutory surplus: Assets less statutory liabilities less any contingency funds.

Surplus ratio: The ratio of surplus, however defined, to liabilities, however defined.

Target surplus ratio: The ratio of surplus to liabilities that is set as the ultimate goal.

The concepts set out in this paper do not depend on the size of surplus or on the definition of what is counted as surplus. However, it is well to examine both the nature of surplus and why it is held.

One version of surplus is *internal surplus*, the total contributions to surplus made by *all* previous and current policyholders plus the earnings over the years on these amounts. The internal surplus is also the difference between assets and the internal liabilities, the latter previously defined as the accumulated funds contributed by *current* policyholders but not yet distributed to them as benefits or dividends. For a particular policy, the cash value plus any terminal dividend is an approximation to the internal liability. The company either could incorporate negative individual values and cash-value deficiencies in the internal liabilities (working on the going-concern basis) or could choose to ignore them. It is apparent that the internal surplus is much larger than the statutory surplus.

To give some idea of size, the approximate proportionate breakdown shown at the top of page 192 reconciles the internal liability with the actual liabilities and shows the resultant internal surplus and statutory surplus. The figures are based on data from the author's company, a Canadian mutual. They may not be typical, since 50 percent of the liabilities are for nonparticipating annuities and pension business. The statutory surplus as a proportion of statutory liabilities is 5.5 percent; however, the internal surplus as a proportion of the internal liability is 22.6 percent.

Why does a company hold surplus? An obvious need is to guard against current and future insolvency—the company must cover the risk of its premiums being deficient to meet the experience that could emerge under various adverse circumstances. The surplus should be sufficient to cover

1. Assets	1,226
2. Internal liability (cash-value deficiencies and negatives allowed; premium basis for annuities)	1,000
3. Commissioners reserves and liabilities	1,087
4. Actual statutory liabilities (net level premium for insurance; more conservative interest rates for annuities)	1,119
5. Unallocated reserves, investment reserve	45
6. Internal surplus [(1) − (2)]	226
7. Statutory surplus [(1) − (4) − (5)]	62

one or more major adverse contingencies, such as a substantial drop in asset values or an epidemic. It also may be called upon to settle a policyholder's suit for punitive damages or a retroactive tax claim. In general, surplus can be viewed as being available to meet unforeseen or sudden events that are not a reasonable part of normal operations. Actual emerging trends in earnings, even though adverse, usually will result in lower dividends, so that the growth of surplus is unimpaired.

On the positive side, a healthy surplus is available to finance growth and enables management to take advantage of opportunities. A healthy surplus also permits an aggressive investment policy.

It is not easy to quantify current surplus requirements or to establish, with full recognition of the risks to be covered, the target(s) the company should set for its ultimate surplus. A number of actuaries have developed much of the needed analysis. The reader is referred to D. D. Cody's discussion note in *Record*, III (No. 1), 27, and to R. F. Link's discussion in *Record*, III (No. 4), 956.

It will be shown in this paper that maintaining a high surplus level or meeting a high surplus target requires either a high contribution from all policyholders or a low growth rate by the company. Also, while the level of existing surplus widens the range of current management options, including the establishment of the immediate growth rate, it will be demonstrated that the current level of surplus does not affect the surplus contribution rate required or the long-term sustainable growth rate.

III. SURPLUS TARGETS

1. *Setting Surplus Targets*

In his paper "Theory of Surplus in a Mutual Insurance Organization" (*TSA*, XIX, 216), C. L. Trowbridge defines surplus as

$$S = \sum_{1}^{n} f_k P_k ,$$

where P_k is a parameter chosen as a measure of hazard k, and f_k is the fraction of P_k that defines the kth component of S. Mr. Trowbridge notes that not all hazards are additive and that the proper level of total surplus would be somewhere between the highest term f_iP_i and the sum of all terms.

A thorough development of surplus theory for life insurance requires a detailed examination of the many hazards to which the business is subject. However, this paper will consider only the two major parameters: the liabilities, L, and the amount at risk, $F - L$. Thus,

$$S = f_1L + f_2(F - L) .$$

Furthermore, for purposes of simplification the terms will be considered as separately determinable and additive in their joint effect. The results should be modified by the actuary to allow for any interdependence.

Consider the surplus requirements for a particular product line, such as participating life insurance. The risk of investment losses might be provided for reasonably as a percentage of liabilities, however those liabilities may be defined. The surplus associated with the investment risk at time t is

$$S_t^1 = f_1L_t .$$

Let the company define an acceptable annual liability growth rate g_1 and an annual charge e_1, as a percentage of liabilities, to maintain surplus. Let the net earnings rate on surplus be i. Then

$$S_{t+1}^1 = S_t^1(1 + i) + e_1L_t$$

$$S_{t+2}^1 = [S_t^1(1 + i) + e_1L_t](1 + i) + e_1L_t(1 + g_1)$$

. . . . . .

$$S_{t+n}^1 = S_t^1(1 + i)^n + e_1L_t\left[\frac{(1 + g_1)^n - (1 + i)^n}{g_1 - i}\right] .$$

Let R be the ratio of surplus to liabilities, so that

$$R_{t+n}^1 = \frac{S_{t+n}^1}{L_{t+n}} = \frac{S_{t+n}^1}{L_t(1 + g_1)^n} .$$

Then in the limit

$$R^1 = \frac{e_1}{g_1 - i} \qquad \text{if } g_1 > i \tag{1}$$

$$= \frac{S^1}{L_t} \qquad \text{if } g_1 = i \text{ and } e_1 = 0 . \tag{2}$$

If $i > g_1$, and R_{t+n} is to remain fixed at the surplus ratio at time t, that is, equal to S_t^1/L_t, then

$$\frac{S_t^1}{L_t} = \frac{S_{t+n}^1}{L_{t+n}} = \frac{S_t^1(1+i)^n}{L_t(1+g_1)^n} + e_1 \frac{L_t}{(1+g_1)^n}\left[\frac{(1+g_1)^n - (1+i)^n}{g_1 - i}\right],$$

which reduces to

$$e_1 = -\frac{S_t^1}{L_t}(i - g_1), \qquad g_1 < i. \tag{3}$$

Formula (2) states that surplus will be maintained at the current ratio without a contribution from operations only if the growth rate of liabilities is equal to the earnings rate on surplus. If the company's surplus ratio is to be maintained at the current level, formula (3) calls for an operational refund whenever growth is exceeded by earnings on surplus; the charge to maintain surplus is a negative one. For example, if the surplus ratio is 10 percent and i and g_1 are 5 percent and 3 percent, respectively, e equals -0.2 percent or a "refund" of 0.2 percent of liabilities each year.

Consider the implications of formula (1). R, the target surplus ratio, is shown to be independent of the current level. Similarly, the required annual policy contribution e for a given growth rate g is also independent of the current surplus. Thus, theoretically, the company can set any ultimate surplus target without taking into consideration its current surplus position. This means that the policy contribution can and even should be uniform, whether the company is new or mature, so long as the target growth rate, or more precisely the difference between the growth rate and the earnings rate on surplus, remains fixed. It will be noted that the policy contributions are not refundable. They are needed to maintain the surplus target for a company growing at a predetermined rate.

There are three variables in formula (1), with management having the option to set any two of them. Let us look at each in turn:

Target surplus ratio (R).—The current surplus and the target surplus must be sufficient to cover the risks involved and to provide the necessary flexibility for financial management of the company. Each company should do the tests it considers appropriate in establishing its surplus target. A larger surplus means greater management flexibility; however, each policyholder will have to contribute increased sums for which he will receive no identifiable return.

Growth rate (g).—It is reasonable for a company to desire to grow, and growth is probably essential to its ongoing viability. It also is reasonable that each policyholder should pay a small amount for the privilege of sharing the facilities of the company. How much growth should policyholders be required to finance, and for what reason? These questions will be discussed in a later sec-

tion. For our purpose, it would seem reasonable that a growth rate consistent with the average for the industry should be justifiable.

Policy contribution (*e*).—Normally this would be the balancing variable. However, there are limits on how much it is right to charge a policyholder or how much he is willing to pay. The charge also will be affected by competition.

Surplus targets based on internal liabilities will be higher than surplus targets as a percentage of statutory liabilities. Also, the growth rate for the former is generally lower than the corresponding growth rate for statutory liabilities. If surplus is defined as the difference between assets and the accumulated fund for current policyholders, then a surplus target R^1 of 20 percent or more is not unreasonable. Using formula (1), if R^1 is 20 percent and g_1 and i are $7\frac{1}{2}$ percent and 5 percent, respectively, we find that the annual policy contribution is equal to $\frac{1}{2}$ percent of the internal liability. If the surplus ratio were defined as a percentage of statutory reserves, the corresponding target ratio R^1 might be, say, 10 percent and the growth rate 8 percent. The contribution then becomes 0.3 percent of the statutory liability.

The formulas for the surplus required to cover the insurance risk (parameter 2) are similar. For example, if e_2 is the annual charge as a percentage of the net amount at risk and g_2 is the annual growth of the net amount at risk, formula (1) becomes $R^2 = e_2/(g_2 - i)$.

It is probable that different surplus targets will be set for different lines of business in order to recognize the differences in the risks involved. For example, the investment risk of a new-money type of product need not be as great as that for an average-money product, since an immunized investment policy can be adopted. Even then, however, a company may find that the thin margins for annuity products, coupled with the high current growth levels, may not permit a satisfactory surplus policy.

In the case of the surplus target for the amount at risk, R^2, it is necessary to consider pragmatically what charge could be made. Suppose the company does not want to charge more than, say, 10 cents per thousand per annum, that the annual growth target for term and/or amount at risk is 10 percent, and that the earnings rate on surplus is 5 percent. Then the target surplus is limited to 0.2 percent of the amount at risk (or face amount if that parameter is chosen). It is fairly apparent that a large surplus cannot be built up from this source.

2. *Significance of the Current Surplus Level*

Although the current surplus level is not a factor in establishing the appropriate charge to policyholders or in setting the ultimate surplus target, it is important to current management. A healthy surplus, as

noted earlier, provides operational flexibility to management and permits a more aggressive investment policy. Although these latitudes could be helpful in augmenting earnings, the increased earnings should be returned to the participating policyholders unless there is a legitimate justification for making special increases to surplus.

A high level of surplus permits a company to take advantage of opportunities for growth. If the surplus is currently in excess of the surplus target, the difference could be used to finance extra growth. If the surplus is less than the surplus target, it should not be used for extra growth unless an exceptional opportunity comes along and the depletion in surplus can be justified by the increased earnings potential for all policyholders.

3. *Management of Operations*

Once the mutual company has established the surplus ratio target and the target growth rate, thus defining the annual charge to support surplus, the balance of the earnings belongs to the participating policyholders. The company undoubtedly would wish to maintain some kind of fluctuation fund that could be positive or negative to absorb the normal fluctuations in earnings. However, with the exception of this smoothing device, the annual operational earnings become the divisible surplus. Management has an obligation to run the company effectively to maximize earnings, not only in the interests of current policyholders but also in order to be sufficiently competitive to acquire new policyholders.

Distributable earnings should not be affected by annual growth in excess of or less than the target growth rate. Excess growth should serve to reduce the current surplus; subnormal growth should increase it. This is discussed more fully in the following section.

IV. GROWTH

1. *Growth Levels*

Growth is an integral part of survival and reproduction, which are natural and basic instincts. For a life company, growth is necessary not only to remain viable in the marketplace but also to sustain the vitality and innovative spirit of an evolving management. The definition of a long-term growth objective for an organization is a legitimate step, even though some charge must be levied to finance that growth. There may be considerable debate, however, concerning how much growth is reasonable and how much any generation of policyholders should be expected to finance.

It can be seen from Table 1A that the average annual growth rate of life insurance reserves for all United States insurance companies, mutual

and stock, has been averaging approximately 5½ percent. The average growth of annuity reserves has been somewhat higher and has been accelerating in the past few years. The in-force statistics show that the average growth of ordinary insurance has been approximately 8 percent, while group insurance has been growing at a rate of 10 percent. The annual growth of assets had been averaging 6 percent, but this has increased and was 10½ percent in 1976 (excluding segregated funds). Surplus ratios (Table 1B) have been declining, with the growth of annuity business probably the main factor along with poor stock market performance.

It is not unreasonable for a company to establish a basic target growth rate that is consistent with either the historical growth rate for the industry or the rate that the company feels ought to prevail. A company that desires to set a higher average growth rate as a long-term objective should be prepared to justify that rate as being actuarially sound and in the interest of all groups of participating policyholders. A likely justifica-

TABLE 1A

AVERAGE ANNUAL GROWTH RATES, UNITED STATES LIFE COMPANIES

YEARS	ASSETS (EXCLUDING SEPARATE ACCOUNTS)	INSURANCE RESERVES	ANNUITY RESERVES	INSURANCE IN FORCE	
				Group	Ordinary
1955–60	5.7%	5.3%	7.8%	.....	.....
1960–65	5.8	5.1	6.8	.....	.....
1965–70	5.0	4.9	7.8	.....	.....
1970–75	6.6	5.4	10.7	.....	.....
1975	8.8	5.5	25.7	7.4%	9.4%
1976	10.5	5.5	20.1	8.7	10.8

SOURCE.—All percentages have been derived from figures in the *1977 Life Insurance Fact Book*, published by the American Council of Life Insurance.

TABLE 1B

SURPLUS RATIOS

Year	All Companies	Top Fifteen Mutuals
1966	8.8%	8.1%
1976	6.7	5.5

SOURCE.—*Emphasis*, July, 1978, published by Tillinghast, Nelson & Warren, Inc.

NOTE.—MSVR included with surplus; liabilities include separate accounts.

tion is the improvement in unit costs possible because of the larger volume of business to be administered. Unfortunately, these expected improvements often are not quantified. Nor are they always attainable, either because of diseconomies of scale or because the extra growth is not planned soundly. Furthermore, growth sometimes may be sought through temporary price cutting or unjustified dividend increases, courses of action which, if not part of a sound financial plan, are very likely to lead to difficulties.

If a company wishes to increase its long-term growth objective by more than the improvement in the earnings rate on surplus while at the same time leaving the surplus target unchanged, formula (1) shows that the company must make a higher charge to maintain the surplus. For example, in the simple situation where the surplus target is measured as the ratio of surplus to liabilities, for a given surplus target and surplus earnings rate the earnings charge to maintain surplus, measured as a percentage of liabilities, would have to increase by $e'' - e' = R(g'' - g')$. Suppose that this additional charge to policyholders is to be offset fully by improved productivity, and that over the long term the ratio of expenses to liabilities is a measure of productivity. Ignoring any income tax ramifications, there must be an expense rate improvement of $x' - x'' = R(g'' - g')$, where x is the ratio of total expenses (E) to total liabilities (L). The necessary percentage improvement in productivity is

$$\frac{x' - x''}{x'} = \frac{R(g'' - g')}{x'} = \frac{S}{E}(g'' - g') . \tag{4}$$

Since this result depends on S, it is dependent on the definition of liabilities. It would be inappropriate to use statutory reserves, which involve a trading of surplus between generations, for this purpose. The proper liabilities to use are the internal liabilities accumulated on existing policies. For most companies, the related internal surplus is more than double the statutory surplus.

The impact of formula (4) is best seen through an example. In a typical mutual company, overall expenses, including commissions, might be approximately 4 percent of statutory liabilities and the statutory surplus might be 8 percent of statutory liabilities. However, if the difference between statutory and internal liabilities is transferred to surplus, the resulting internal surplus is more likely to be 16 percent or higher. In this situation, every percentage point increase in the target growth rate requires an improvement in productivity of at least 4 percent. Any

improvements are in addition to those that had been expected previously from normal sound business management.

It is doubtful that many companies could set a long-term growth target much in excess of the industry average and justify the implications to any generation of their policyholders. Nor is it reasonable to reduce the surplus target to achieve the excess growth, since the surplus target should have been determined a priori as appropriate to the kinds of risks being taken by the company. These risks would not be expected to change unless there was to be an overall shift in the nature of the business in force or the investment mix.

The above considerations do not apply to temporary increases or decreases in growth rates. Thus a company could have an above-normal growth rate for a number of years to take advantage of a favorable situation, provided that during some other period there was growth below the targeted level.

2. *Reducing Growth Targets*

The potential additional policy contributions necessary to maintain surplus for increasing growth rates apply in reverse for decreasing growth rates. An argument could be advanced logically for lowering the growth rate below the industry average, with all current and future policyholders benefiting as long as the unit expenses did not increase by more than the prescribed amount (in our example, 4 percent per 1 percent change in growth). Although the argument conceivably could hold, it is probable that the company ultimately must either go into decline or start to grow more rapidly because of its more favorable policyholder costs. The situation with respect to decline will be dealt with further in a later section.

3. *Managing Growth through a "Development Fund"*

If a company follows the principles set out in this paper by establishing a long-term surplus target and a long-term growth rate, it is suggested that the company consider dividing its surplus into two notional components: (i) operational surplus and (ii) development fund. The company's surplus target can apply to the first of these or it can apply to both together. The operational surplus in turn can be divided notionally by product line or by territory, or on any other basis that recognizes significant risk differences or experience groupings.

If a company decides to adopt the approach of using notional operational surplus funds, it may find it convenient to set the starting surplus ratio for each of its divisions equal to the respective surplus targets. The

balance of the surplus, if any, then could be assigned to the development fund, so that the company's overall surplus target might differ from the individual product or divisional targets.

There are several advantages to this approach. First, it enables the company to determine surplus and growth targets for divisions and to maintain exactly the surplus target for each of the chosen divisions, given a fixed earnings rate on surplus, by charging to each division annually on the basis of the assumed growth rate rather than the actual divisional growth rate. A second calculation then would be done, based on the actual growth rate. If this were lower than the target rate, there would be a transfer to the development fund, while if it were higher a charge would be made from the development fund. The effect of abnormal growth on a division is neutral.

A second advantage occurs when a division of the company experiences unusual profits or losses. It may be felt that these amounts should not accrue to the benefit or detriment of the current generation of policyholders or be allowed to subsidize current pricing. An example would be nonparticipating permanent life insurance, where most of the business was written many years ago at rates of interest much lower than are being earned currently. The excess profits can be transferred by formula to the development fund to finance extra growth or to maintain the general corporate surplus.

A third advantage is that the method enables the company to isolate its earnings on various blocks of business, consistent with the long-term targets established by the company. For example, if a line is using some form of fund accounting for its internal liability determination, any earnings in excess of those required to maintain surplus for the division in question could be considered as available to improve dividends or reduce premiums. Of course, the actuary will wish to consider the influence of normal annual fluctuations in earnings, as before.

A fourth advantage of the approach is that it would enable the company to adopt a higher temporary growth rate to be financed from the development fund. This also could include the cost of an acquisition.

There can be some conflict when managing both operational surpluses and the total company surplus. Regular growth in excess of the targets by one or more of the product divisions could put a strain on the development fund or the overall surplus. This could require restraints on growth. Alternatively, management even could allow the accumulation of a negative development fund, provided that it was satisfied the long-term overall targets were not being jeopardized.

Another difficulty could arise when the company sets its surplus targets for individual lines on the basis of internally generated funds. Since these are somewhat lower than statutory liabilities and the overall corporate surplus target is likely to be based on statutory liabilities and statutory surplus, the two targets may not be in harmony. Accelerated growth for ordinary business will not affect the internal funds significantly, but it would have a major impact on statutory surplus. While it is not improper to use internal funds for divisional targets, the statutory constraints must be recognized in the ultimate calculation.

V. INTERNAL PERFORMANCE ACCOUNTING

There are many advantages to statutory accounting—chief among them the discipline placed on management to ensure that future obligations will be met. However, statutory accounting is not suitable for internal analysis, since it involves a trading of funds between generations of policyholders, thus obscuring the actual financial status of any policy or group of policies.

The asset shares that were calculated at the time of issue represent the projected financial status of a policy. These asset shares, as modified for actual experience and dividends, should represent the current status, that is, the accumulated fund actually generated by the policy. A life insurance company will find it quite helpful to determine the earnings and balance sheet based on this more realistic generation of funds. This approach will not imply that the excess of statutory reserves over asset shares is in any sense distributable surplus; however, it will provide management with a clearer picture of true earnings, operational performance, and the margins available in the statutory reserves to cover the various contingencies and risks.

Internal earnings will require several adjustments to the usual statutory earnings. Some of the considerations are the following:

Investment income.—Realized capital gains and losses on bonds should be amortized into income over the remaining lifetime of the bonds. Realized and unrealized gains and losses on equities should be brought into income through some type of smoothing device. The approach now used in Canadian statutory life company accounting has much to recommend it—7 percent of each of realized and unrealized gains and losses on equities are brought into income each year.

Actuarial liabilities.—The use of internal liabilities is suggested, with recognition of negative values or cash-value deficiencies optional. The policy cash values may be satisfactory as a practical approximation.

Expenses.—These should be allocated by function and product line on a

basis consistent with pricing, and in such a way as to create accountability for expense performance as a by-product. Some kind of functional costing procedure is highly desirable.

The author's company permits a portion of general overhead expense to be a direct charge against surplus earnings. This helps to reduce some of the difficulties in negotiating the allocation of overhead to the various divisions. In addition, special approved corporate development expenses may be charged to surplus earnings. Examples are projects that cannot expect to benefit earnings of any existing product line in the short run. While the use of either device will increase the operational earnings, there will be an equal and opposite decrease in the earnings on surplus. This in turn will require a higher charge from earnings to support surplus. Thus the value of the approach is more psychological than real.

Taxation.—In most countries, including the United States, a large proportion of income taxes, if charged marginally, will be a deduction from the investment earnings on surplus. The balance of the taxes can be allocated to the various lines or divisions using the "minus one" method (in which tax is computed as the difference between the actual tax and the tax had the division been removed) or any other reasonable method. If some other approach is used that allocates less tax against surplus and more to operations, it will be counteracted by a requirement for less earnings to support surplus.

Earnings on surplus.—This will be the investment income allocated to the surplus fund (as determined on the internal basis, that is, the internal surplus) reduced by allocated income taxes and any expenses charged to surplus.

Accounting for earnings on a realistic basis is of considerable value to management. It enables the company to set and administer its surplus maintenance policy as a first charge on earnings. It permits each line or division of the company to be accountable more precisely for its performance, benefiting both the company as a whole and the equities of individual policyholders. Finally, it gives the company a better picture of the costs of growth and development, and of how these should be managed by line or division for the benefit of the total company.

VI. MERGER, ACQUISITION, DIVESTMENT, AND WINDUP

1. *Merger*

The question of mergers of mutual companies has been dealt with thoroughly by Howard Kayton and Robert Tookey in "The Merger of Mutual Life Insurance Companies" (*TSA*, XXIV, 261). In that paper, the authors recommend the establishment of three accounting funds, one for the business of the retiring company, one for the prior business of the surviving company, and one for the business written after the merger. The surplus necessary to finance new business must be obtained from

the two original funds, so that the overall company is maintained as a going concern and reasonable equity is provided for each of the three groups of policyholders. Thus, with the modifications noted in the paper, the ultimate difference in return to the two groups of closed policyholders will depend on (i) the surplus levels at the time of the merger and (ii) the individual emerging experience.

This author agrees with the second point, the need to recognize differences in the emerging performance of the two groups. However, he does not feel that it is appropriate to recognize differences in the initial surplus levels unless they have been created before the merger by overcharges or undercharges to the current group of policyholders. The author contends that the surplus held by the company at any given time should have no significance to policyholders except to the extent it enhances management operational performance. The policyholder should be affected only by the *target* surplus level, the long-term growth rate, and managerial performance.

It would be more equitable, at least on the basis of the concepts of this paper, to determine the accumulated fund for both groups of original policyholders and to maintain the individual surplus charge previously made for each. If the surplus charge approach had not been used, the charge could be set equal for both groups (probably the same as for the merged group). Thereafter the funds can maintain themselves, following their experience separately. In assessing the surplus maintenance charge, differences in the growth rates could be taken into consideration to the extent that they did or would influence the emergence of dividends had the merger not taken place.

2. *Acquisition and Divestment*

Should a mutual life insurance company consider an acquisition? If so, what price should it be willing to pay, and would the price depend on whether the company being purchased is a stock or mutual organization?

There is no reason why a mutual company should not consider an acquisition, provided it is within the context of the long-term growth targets the company has established or, more particularly, if it has the additional current surplus available to finance the purchase.

The price the company should be willing to pay is not difficult to determine if the acquisition is a stock company. Under those circumstances the price will be governed by market factors. The mutual company likely would justify the acquisition using investment criteria, with due consideration for the synergistic savings possible.

There are considerable theoretical difficulties in establishing a fair price

for a transfer between mutuals. The range of possibilities will lie between the price based on a stock company pricing approach and a second method, dubbed the "proportionate slice of the pie" approach.

A comment should be made about the latter approach. The vendor may wish to sell one of its product lines, or it may wish to divest itself of its operations in one of its foreign territories. In either instance the company may not have kept sufficiently accurate books to identify precisely the portion of its surplus that had been contributed by the particular block of business to be divested. In the absence of evidence to the contrary, it might be assumed that a suitable portion of the total surplus belongs to the block in question. The slice-of-the-pie approach then would call for the divesting company to transfer assets equal to not only the amount of the liabilities but also the proportionate share of surplus (substituting the actual share if it is known).

While the slice-of-the-pie approach has some theoretical appeal, it normally does not have practical application. A mutual company divesting itself of a portion of its business, whether willingly or as required by law, is going to seek the best terms it can after meeting the legitimate rights of all policyholders, both those being transferred and those that continue. There almost always will be another mutual company or many stock companies that will make a considerably more favorable offer than the slice-of-the-pie approach.

Possible practical approaches for a small block of business would be to transfer assets equal either to the statutory liabilities in the latest statement or to the minimum statutory liabilities. The latter approach has been used in two instances by the author's company—one involving an acquisition, the other a divestiture. In both cases the other company was a stock company.

If a very large block of business is involved, it may become difficult to arrive at a suitable transfer value. The author's company made a divestiture of this type several years ago when it transferred its South African business to a stock company. Earnings projections were made for both participating and nonparticipating business. Sufficient assets were transferred not only to cover statutory liabilities but also to ensure that future dividend expectations could be met. In return, the selling company received securities equal in value to the present value of future profits on the nonparticipating business.

More recently, the author's company entered into an agreement in principle to take over the Canadian business of a foreign mutual company. Although the transaction would have been large ($1.5 billion in assets), the vast bulk of the liabilities would have been nonparticipating

pensions and annuities. The proposal for the determination of book assets to be transferred was on the following basis:

1. For nonparticipating annuities and pensions: book assets equal to the statutory liabilities determined on the basis the acquiring company might reasonably use, taking into consideration the year of issue and type of plan.
2. For nonparticipating insurance: assets equal to the net level premium reserves.
3. For participating insurance: assets equal to the net level premium reserves held, plus a surplus equal to 10 percent of reserves. This was intended to approximate the average surplus held by Canadian companies and was included to support the reasonable expectations of these policyholders. It also was needed to finance the dividend guarantee. (The dividend scale for the following five years for the policies transferred was to be at least as high as the current scale. Thereafter the surviving company's scale would be used; any reductions would not be greater than those applying to the corresponding policies of the acquiring company.)
4. For separate account business: a small charge for future profits.

By using this approach, the acquiring company would have avoided an immediate surplus strain, and in fact there would have been a small addition to surplus. The advantage to the divesting company would have been that it retained a portion of the excess assets it had held within the territory. The overall statutory surplus ratio for the acquiring company would have decreased somewhat; however, the merger would not have been expected to affect the expectations of any policyholders connected with the company, past, acquired, or future, except favorably to the extent that unit cost savings might have been achieved. This would have resulted from the fact that the original surplus target remained intact, as would the basic charge to policyholders. The surplus ratio would have declined, but not below the surplus target; even if it had, it could have been restored in the ultimate without any additional charges to policyholders. The transaction would have been more favorable than acquiring the same volume of business through direct writing, since the transferred reserves plus surplus would have been well in excess of the asset shares.

Had the agreement been completed, the divesting company's surplus ratio would have increased. This need not have affected current expectations of its remaining policyholders, provided that the company stayed with its long-term surplus target. Alternatively, the company could have used the proceeds to acquire a block of business in its home territory.

This particular transaction was never consummated because of a number of technical difficulties. Not the least of these was the absence

of any prescribed and generally understood approach to transfers between mutuals and the rights of the policyholders affected.

The transfer or sale of business in a British Commonwealth country requires sanction by a court or from the government. In either case, heavy reliance is placed on a report prepared by an independent actuary, as set out in the law. The independent actuary will review the terms of the transaction and the actuarial reports of each company and will satisfy himself that the policyholders affected are receiving a fair deal. If participating business is involved, a guarantee fund may be required, or the acquiring company may have to provide some kind of dividend guarantee. It is interesting to speculate what conclusion the independent actuary would have reached had he completed his report for the above transaction.

The reader is referred also to Section VII, 2, of this paper.

3. *Windup*

The author feels that no group of policyholders should be required to finance excess growth. Similarly, it is wrong for any group of policyholders to achieve an unexpected benefit from the windup of a mutual company or from a definite decision to allow the company to decline.

Is it necessary that a mutual company exist in perpetuity? This should not be a requirement, legal or moral, for it cannot be in anyone's interest to force an unwilling company to operate.

Strangely, the situation of a company with a poor surplus position is probably the easiest with which to deal. At some point, the company should be merged with a healthy company on the basis of the principles outlined in Kayton's and Tookey's paper on mergers, or using the procedure outlined in this paper. If, however, the company has a very healthy surplus and little or no growth, or no longer writes new business, it would seem that the only equitable solution would be to have the insurance commissioner step in and manage the company on a trustee basis, returning to the policyholders dividends commensurate with their actual experience, probably with no requirement for a surplus contribution. When all the contractual benefits have been paid and all other obligations met, the remaining surplus can either be transferred to the insolvency fund of the state or province or be apportioned among the jurisdictions on some equitable basis. Although there may be considerable legal difficulties with this approach to windup, it is preferable to allowing policyholders to make decisions that will result in the accrual to them of the contributions that were made in good faith by prior generations of policyholders to maintain a going concern.

VII. MISCELLANEOUS CONSIDERATIONS

1. *Nonparticipating Business*

A mutual company should be able to write nonparticipating business if it can be shown that the participating policyholders, past, present, and future, are not likely to be affected adversely. Presumably the investment required is a sound one from which there will be a return commensurate with the risk, and this investment is in a business with which the company is familiar.

The writing of nonparticipating business will broaden the range of products available to meet the public's needs and may result in better use of the company's distribution system. There are risks of loss, and these must be evaluated. There may be some feeling that the interests of the two groups of policyholders may become blurred, but this should not be a problem. The rights of the nonparticipating policyholders are defined precisely by their contracts, so that all the profits of the company, whether arising from the participating or from the nonparticipating business, accrue to the participating policyholders.

2. *Buying or Developing a New Line of Business*

Some of the large United States mutuals recently have purchased or established property and casualty affiliates, transactions for which a large investment of policyholder funds has been required. Other companies have acquired investment management companies and mutual funds, or have established new lines of business. Can such actions be justified?

In some cases the company will look at the added line as an investment of its surplus. The return on the investment would have to be justified in relationship to the return available on other investments or on growth in lines more traditional for the company. In other cases, the investment is to fund a new participating line. This can be justified, but, again, only within the concepts set out in Section IV. The company would have to use excess surplus to finance the line, or it would have to modify its surplus requirements. If the latter, a higher surplus charge would be required from ordinary participating policyholders, which could be justified only if there were unit cost savings or other factors leading to improved productivity.

3. *Mutualization*

Occasionally, the owners of a stock company will desire to mutualize as an alternative to selling their shares. The actuarial concepts in this paper do not supply a basis for determining a price to be paid for the

shares. However, the proper price would be approximately the amount the shares would attract through a takeover proposal. The advantage of mutualizing is that the company would be managed solely in the interests of all present and future policyholders. The disadvantage is the loss of a third-party arbitrator in deciding what is best for the company. The policy and goals of a stock company are usually clearer than those of a mutual company. The prime purpose of this paper has been to sharpen the focus for mutual companies so that their financial planning can be directed more precisely in the interest of all participating policyholders.

4. *Demutualization*

It will be fairly rare that a mutual company wishes to become a stock company. In all likelihood, it will be to acquire the necessary additional capital to finance growth opportunities the company sees for itself. If demutualization is to take place, a fund should be established to protect the interests of the current participating policyholders, and their surplus charges should be retained on the same basis as those established prior to the demutualization. Some dividend guarantee probably would be justified. The fund established would become part of the company's participating account and would back the expectations of participating policyholders indefinitely. The usual charge from the participating fund for the benefit of stockholders of, say, 10 percent of the profits of the participating fund should be applied only to the profits arising out of the participating business written after the demutualization.

Under no circumstances should the participating policyholders at the time of demutualization receive shares equal to their so-called equitable share of the net worth of the company, since they then would be receiving the surplus contributions of prior generations of policyholders.

VIII. CONCLUSION

The fundamental actuarial considerations for a mutual company suggest that policyholders should obtain insurance at cost plus a charge to maintain the company and provide for reasonable growth. They have a right to and should demand good operational performance from management. However, the policyholder should not be penalized by or allowed to benefit from a change in the direction, purpose, or character of the organization. Nor can the policyholder be considered an owner in the sense of having any right to the assets of the company other than those that ultimately will be required to ensure the performance of his contract.

The management of a mutual company should be guided by a formal

surplus maintenance policy. This policy will include (i) a corporate surplus target(s), (ii) a long-term corporate growth rate, and (iii) a surplus maintenance charge from all policyholders. In general, significant decisions should be consistent within the policy as defined and also with the long-term viability and equity of the organization. Short-term decisions should be made recognizing the company's stewardship function and its obligation to keep the net cost to the policyholders as low as possible consistent with service and benefits provided. Growth, both short-term and long-term, should be part of the corporate plan and justifiable within the surplus policy of the company.

DISCUSSION OF PRECEDING PAPER

CLAUDE Y. PAQUIN:

In order to have a bird's-eye view of the topics considered by Mr. Leckie, let us consider the titles of the principal sections of his paper: "The Rights of Policyholders"; "Size and Purpose of Mutual Company Surplus"; "Surplus Targets"; "Growth"; "Internal Performance Accounting"; "Merger, Acquisition, Divestment, and Windup"; and "Miscellaneous Considerations." These topics are of undeniable interest to actuaries having a role in the operation of mutual insurance companies. But these topics are of interest also to actuaries who, being policyholders themselves or seeking to represent the interests of policyholders, view them in a different perspective. This perspective is the one in which I will discuss his paper.

Mr. Leckie is rather hazy on the rights of policyholders, and his brief paper cannot distill appropriately the extensive literature, primarily legal, that treats this subject. The paper does not refer to the history of the cooperative movement in England and North America, from which mutuals have evolved. A cooperative has been defined as "a business enterprise jointly owned by a group of persons and operated without profit for the benefit of the owners." Among the principal types are consumer cooperatives, marketing cooperatives (such as the wheat pools of western Canada), and service cooperatives. Farm organizations, such as the Grange, have been sponsors of all three types, which generally have been governed according to principles known as Rochdale principles. Service cooperatives include credit unions, mutual savings banks, and mutual insurance companies (life and nonlife).

With this as a background, the actuarial profession cannot claim to be wholly without guidelines as to the operating principles of a cooperative, although it must be conceded that the educational program of the Society does not specifically cover this topic. Such an educational program might best be left, in any event, to mutual insurers that employ actuaries.

The paper itself is based on the premise that "all participating policyholders should make a comparable and equitable contribution to the enterprise." My first question is, "Why should the policyholders make any contribution at all?" Some answers are apparent: so that the organization will survive, or so that the organization will build up a surplus. But these answers, which have survival as their bottom line, are unsatisfactory.

The first and most fundamental question the mutual company should

ask is why it exists. The answer is: "To provide a needed service to our members." Just as a power company's business is to provide electric power to the residents of an area, a mutual insurer's business is to provide the administrative services and pooling service fundamental to the insurance needs of its members. The proper application of actuarial principles (as in underwriting and the calculation of premiums) will ensure that. If premiums are conservative and paid in advance, and dividends are paid in arrears, what need is there for contributions to that bottomless pit called surplus? And what need is there for a surplus other than the difference between the gross premium and the "experience cost"?

These philosophical questions are not easily answered where the calculation of experience cost is complicated by the need to hold actuarial reserves, as when premiums and risks are not matched exactly year by year—for example, for whole life insurance. These complications aside, however, it becomes easier to perceive that policyholders should not be called upon to underwrite, even at a profit, nonparticipating business, extensive investment, or other operations not related to the insurer's basic service obligation to its members.

I have been compelled, by Mr. Leckie's use of the word, to refer to "policyholders" when I should have referred instead to "members." If mutual insurers abstained (as they should, under cooperative principles) from doing business with nonmembers, the words *members* and *policyholders* would, of course, be interchangeable.

Perhaps the true principles of the cooperative movement have been corrupted beyond hope in the operation of mutual life insurance companies. If so, then the theories advanced by Mr. Leckie might be of substantial value in preserving intergeneration equity, if such a feat is possible. They also might offer guidance to the conduct of the participating insurance operations of stock companies (for which participating policies are in the nature of preferred stock). I fear, though, that we are confronted here with an elaborate and reasonably attractive mathematical theory that masks the erroneous principles on which it is based. This theory supports one principal objective: survival of the organization for its own sake. While I value Mr. Leckie's efforts and his contribution, I can agree neither with his basic premises nor with his conclusions. In a mutual insurance company, the members *are* the management, and serving the members' insurance needs is the objective.

BRIAN R. NEWTON:

Mr. Leckie has presented a timely paper covering aspects of operating philosophy for a mutual insurer that are fundamental to the pricing and

dividend decisions made by the actuary. However, there are alternative views that may contribute to definition of a publicly acceptable operating philosophy.

Mindful of the well-known story of the emperor who sent six blind retainers to examine a large unknown beast (an elephant) and received reports describing six different items ranging from a snake to a tree, I feel that Mr. Leckie's description of the species known as mutual life insurer may be relevant to those who have spent their careers swallowed up like Jonah inside one of the species. However, his conclusions may come as a surprise and may be offensive to policyholders and others who are more interested in the external characteristics and behavior of the beast. I should state that the alternative views are presented to add to discussion of the issues raised and should not be regarded as reflecting any official position of the Ontario Superintendent of Insurance Department.

At the start of Section IV of the paper, Mr. Leckie claims that without growth it is impossible to sustain the vitality and innovative spirit of management or for the company to remain viable. Since these statements are not proved, presumably they are presented as axioms. But, using the zoological analogy that he also employs, one may associate growth with immaturity, and many examples are known of vitality and innovation at advanced years when growth has ceased. Economies of scale dictate growth to a minimum size necessary for economical administration; statistical considerations also indicate a certain minimum size to protect policyholders. The challenges of a stationary business or adjustment to a lower level of activity may well be a better test of management skills than the relatively easy environment of growth.

Having decided that growth is essential to management well-being, Leckie advocates levying a nonrefundable charge against policyholders to accumulate excess surplus beyond that which would be deemed reasonable to provide security against adverse contingencies. This immediately brings him up against the problem that he has defined an operational mode where it is perpetually to the advantage of current policyholders to liquidate the organization rather than hold their contracts to maturity. To circumvent this danger to management, Leckie first postulates that policyholders do not have ownership rights to excess surplus, but later he proceeds to advocate legal changes, such as granting a reversionary interest to the regulatory authority, to defeat policyholders' voting rights. His justification is that mutuals have already accumulated, by historical accident, excess surplus from matured policyholders and that, since current policyholders have not contributed to the excess, they should have no interest in receiving it.

We may consider the foregoing in the light of legal precedent. A buyer of land who discovers mineral resources unknown to the previous owner is not denied the benefit of those resources merely because he did not expect to find them and did not pay for them. Further, when one considers the many variations of conveyance that grant title to land, one does find similarities between the mutual policyholder's voting right, which exists while his contract exists, and those conveyances that create a trust to hold land for the current owner's benefit.

The doctrine of "treasure trove" may also provide guidance. If valuables are discovered buried on land, ownership depends on whether the valuables are determined by a court to have been deliberately concealed or merely lost. In the former case the valuables revert to the crown; in the latter case the valuables become the property of the current landowner.

Following these precedents, one might hold that the *discovery* by management of excess surplus derived from matured policyholders does not create a separate fund for the use of management but creates an obligation on the part of management to current policyholders. There can be no obligation to future policyholders who have not yet chosen to acquire rights in the mutual insurer. However, in the case of *deliberate* accumulation and withholding of excess surplus from a generation of policyholders, Leckie's suggestion of passing title to the regulatory authority might be viable. It might even be considered a logical extension of this concept not to wait until liquidation but to require all insurer surplus to be deposited, as it emerges, with the regulatory authority. This would create problems for management, regulatory authorities, and policyholders but would not preclude ongoing operation and expansion of the life insurance business. However, a competitive life insurance industry that is professionally managed and supervised would seem to be a better option, particularly if it is clearly in the interest of policyholders to sustain, rather than liquidate, the insurers.

The dilemma can be resolved by adapting a theory familiar to most students of the Institute of Actuaries' study materials. The concept is there developed of the bonus or dividend earning power of current policyholders determined on realistic assumptions. Premium rates and dividend expectations of new entrants to the fund are examined in the light of the expectations of current participants. It is considered incumbent upon the actuary to adjust prices for new entrants to avoid diluting current policyholder expectations; if for marketing reasons the actuary cannot do this, the fund must be closed to new entrants. New entrants can be placed in a separate fund. If current policyholder expectations are taken to include

any inherited excess surplus, then the appropriate charge is made to new entrants and there is no longer any advantage to be gained by liquidation of the insurer, assuming professional and competent ongoing management.

Adoption of this simple principle replaces Leckie's nonrefundable management growth charge by a refundable charge appropriate to the surplus ratio of the fund the policyholder is entering and makes interference with policyholder rights unnecessary. Growth, shrinkage, and merger all can be dealt with in this context by the usual exercise of actuarial judgment and skill without encountering the obvious anomalies inherent in the Leckie approach.

Of Leckie's final conclusions, the one referring to adoption of a formalized surplus policy is the most valuable and improves perception of management performance regardless of operating philosophy adopted. The remaining conclusions tend to be inadequate. Provision of insurance at cost can be achieved by incompetent as well as by competent management. More precision is needed in formulating this objective.

If policyholders are not to be penalized by, or allowed to benefit from, changes in direction, purpose, or character of the organization, but have a right to demand good operational performance, then perhaps some fund is necessary to immunize policyholders from whatever management activity Leckie has in mind that does not fit the category of "operational performance." However, it would be difficult to separate those changes in mortality, investment return, and expense that result from policyholder action from those that result from management action, a separation implied by Leckie's concepts. The question of policyholder ownership rights appears to be more of an axiomatic assumption made by the author than a valid deduction.

The beasts in the life insurance zoo can be forgiven if through ignorance they occasionally blunder about and injure the policyholders upon whom they depend for sustenance, as long as they are apologetic and try to make amends when this occurs. If they stubbornly insist that their own survival and growth are essential for future policyholders and that these may be achieved at the expense of current policyholders, then mutual life insurers should not be surprised if the public seeks out more attractive animals upon which to lavish its affection and the life insurers are left to starve. The test of good management is its ability to fulfill its promises while adapting to change rather than its ability to grow or to provoke change without any resulting benefits.

Clearly, once a valid set of cost indexes can be developed to measure initial policyholder expectation and subsequent changes in that expecta-

tion, management can adopt objectives and performance measures consistent with those of its policyholders. This will enable the life insurance animal to demonstrate, rather than merely proclaim, its right to exist.

HOWARD H. KAYTON:

Mr. Leckie's paper is well researched and well presented. His topic is of special interest to me now, as it was during the many years that I spent as an actuary for two mutual life insurance companies. I have often considered such questions as the following: (*a*) Who owns the company? (*b*) Should the company continue to exist in perpetuity? If not, who is entitled to receive the surplus? (*c*) What of the *surplus* surplus (or development fund)? and (*d*) Under what circumstances should the company enter new lines of business?

There are many approaches to answering these questions. Mr. Leckie views the mutual company as "a kind of trust fund, with participants having certain rights to their own net contributions (cash values) but not to those additional assets (surplus) required to maintain the trust." Using this as a foundation, Mr. Leckie goes on to develop a basis for determining charges to participating policyholders, and for selling and acquiring blocks of participating business.

I disagree with the basic premise of the paper, which is stated above. Granted that I am not faced with the practical problem of running the actuarial functions of a large mutual life insurance company (as Mr. Leckie is), I still find that this premise is too convenient, and could result in the perpetuation of poorly managed mutual companies, which could then be run solely for the benefit of entrenched managements.

Mutual companies presumably exist to provide low-cost insurances that would not be available in the absence of such companies. Certainly the argument can be made that the presence of many mutuals among the top premium writers in the United States supports this premise. But Mr. Leckie's approach can be used to justify the continuation of *all* mutuals, many of which appear to be continuing solely because there is no practical way to "wind up" the company, and obviously no motivation to do so. Mr. Leckie's suggestion, that on windup any remaining assets go to the insolvency funds, should remove any remaining motivations.

My own approach to this problem is that the surplus (and surplus surplus) belongs to the policyholders, not to the company management or to the state insolvency funds; neither, for reasons of practicality, does it belong to the former policyholders. Further, each policyholder's interest is proportional to his or her prior contributions to surplus, but it

ceases upon termination as an active policyholder. All surplus in excess of the amounts contributed by existing policyholders belongs to existing policyholders in proportion to the amounts they have contributed.

This approach, unlike Mr. Leckie's, does not provide a conceptual "slush fund" or "development fund" that is available to management "to finance extra growth." Instead, management must view any surplus it uses for extra growth, or for more flexibility in investments (including investments in computer subsidiaries, mutual funds, investment management organizations, and the like), as a loan from the existing policyholders, which must be justifiable in terms of ultimate expected benefits to those policyholders. Obviously the loan concept imposes a much higher degree of responsibility for prudent use of the funds than does Mr. Leckie's development fund concept.

In today's litigious environment, Mr. Leckie's result may be more desirable. However, I do not believe that it should be accepted merely because it provides a more solid defense against anticipated onslaughts on the tremendous accumulated surplus of mutual insurance companies. Management should be able to withstand such onslaughts without the necessity of developing a theory that might rationalize a less responsible approach to the fair and equitable treatment of mutual policyholders.

Rejection of this basic premise also results in rejection of several of Mr. Leckie's conclusions (my own conclusion is shown following the section reference):

1. "Policyholders should not benefit from or be hurt by unusual situations" (Sec. I): They are entitled to such benefits.
2. "The participating policyholders . . . should be permitted to make only those decisions that maintain the organization in its existing form" (Sec. I): Such policyholders should control all decisions, *particularly* those that relate to changing the form of the organization.
3. "The excess profits can be transferred by formula to the development fund to finance extra growth or to maintain the general corporate surplus" (Sec. IV): Excess profits should be apportioned to the policyholders.
4. "It would be more equitable . . . to determine the accumulated fund for both groups of original policyholders [when merging mutuals] and to maintain the individual surplus charge previously made for each" (Sec. VI, 1): Accumulated funds for prior policyholders should be maintained proportionate to the levels prior to the merger.
5. "It is wrong for any group of policyholders to achieve an unexpected benefit from the windup of a mutual company" (Sec. VI, 3): Who else should receive it?
6. [On windup] "When all the contractual benefits have been paid . . . , the remaining surplus can either be transferred to the insolvency fund . . . or

be apportioned among the jurisdictions" (Sec. VI, 3): Such excess belongs to terminating policyholders. It is the obligation of management to avoid building up surplus so excessive that it would cause inequities among generations of policyholders upon demutualization.

I have not addressed the practical problems of how management should determine whether their use of the "development fund" is prudent and how much of existing surplus should be returned each year. Instead, I join in Mr. Leckie's invitation for subsequent development by others.

THOMAS P. BOWLES, JR.:

Mr. Leckie's paper is a significant contribution to actuarial literature. It should serve as a base upon which valuable dialogue will be accumulated—dialogue that will be highly controversial and provocative.

This discussion addresses two of the areas covered by Mr. Leckie in his paper: the rights of policyholders (Sec. I) and merger, acquisition, divestment, and windup (Sec. VI). My comments reflect the following conclusions that differ significantly from those of Mr. Leckie:

1. In general there are no vigorous, easily marshaled forces that pass judgment on the performance of the management of a mutual life insurance company, as long as statutory restraints and morality are not compromised.

2. The objectives of a mutual life insurance company cannot be condensed into a concise standard against which external monitoring mechanisms can measure performance, failure to "measure up" leading to management change. Objectives are like "words and sunlight; the more condensed they are the deeper they burn."

3. The definition of ownership of a mutual life insurance company poses a legal, not an actuarial, question. The actuary is the only professional qualified to translate that definition into a determination of equity arising from ownership and to allocate that equity among the individual policyholders or groups of policyholders.

4. My understanding of the legal reasoning involved leads to the conclusion that the rights of the policyholders, in the aggregate, ultimately to control the direction of the company and dispose of equity, confer upon them the rights of ownership, a position supported publicly by a large United States mutual life insurance company (see the Appendix to this discussion).

5. The policyholders own the assets of a mutual company. The state has no equity interest in the assets of a company owned and controlled by its policyholders.

6. Upon merger, acquisition, divestment, or windup, management decisions must recognize the equity interest of the policyholders, that is, the owners. Any compromise of this fiduciary responsibility must inevitably lead to litigation as informed policyholders assert their claims of equity.

It has been said that the most nearly secure corporate position in the United States is that of chief executive officer of a mutual life insurance company and except for rare cases in which regulatory pressure has led a board of directors to change management, the record suggests the validity of the statement. Even in the case of those forced management changes, it is not at all clear that they would have occurred if the board of directors had resisted the change presumably forced upon them. Such reaction to pressure may suggest that the mutual life company's chief executive officer renders his report card to an authority considerably more concerned about, and sensitive to, public opinion and regulatory opinion than would be found in a stock company.

In considering the two general questions put by Mr. Leckie (see the first paragraph of Mr. Leckie's abstract), we must be careful to avoid the proposal of answers reflecting deeply etched traditional concepts that, until recently, have influenced both the appraisal of the rights of policyholders and the management direction of a mutual life insurance company. Management direction may be influenced to some extent by the security of the position of the chief executive officer.

The rights derived from ownership, ultimately, are measured by an equity, however defined, which the actuary will quantify. The actuary should recognize that this measurement is subject to critical examination by the policyholders, who may seek redress through the courts of law and equity.

Once the definition of policyholders' rights (Mr. Leckie also uses the term "equitable interests") has been established, it may be logical to assume that management direction represents an effort to protect and safeguard those rights and to pursue a course that enhances their value. Perhaps the dilemma faced by the mutual life company may be related to the failure of prior management to return to policyholders such amounts as "dividends to those groups of policies that contributed the profits." Mr. Leckie refers to the amounts returned as consisting of operating profits after a small surplus charge. One might argue persuasively that if management causes part of the operating profit to be retained (for the benefit of continuing policyholders), then the amounts so retained represent part of the equitable interest of those continuing policyholders.

Mr. Leckie implies that the clarification by the United States courts that management has the right to determine divisible surplus and to allocate it among participating policyholders automatically ensures that the policyholders' equity rights are protected. There is evidence to support the contention that this is not always the case.

In the first paragraph of Section I, "The Rights of Policyholders,"

Mr. Leckie states that "most companies would deny him a beneficial interest in the net worth of the company." The "him" presumably refers to the policyholder who does not continue as a policyholder. If reference is actually to the continuing policyholder, I suggest Mr. Leckie attach to his paper the documentation for such a strong statement. In the United States certain statutes do preserve for a stated period the rights of a discontinuing policyholder to equity interest in case of a distribution under a demutualization process.

Mr. Leckie states that "it is perfectly reasonable that a small, nonrefundable surplus charge be made to the policyholder for his right to be a member of that organization for a limited period of time." It would be of interest to have Mr. Leckie set forth the rationale of that conclusion. Construed in context, Mr. Leckie proposes that the nonrefundable charge accrue to continuing policyholders, but without their having any equity interest in it, suggesting that it revert ultimately to the state.

It is also difficult to understand Mr. Leckie's statement that there is "little fundamental difference in ownership rights between a participating policyholder of a mutual company and a nonparticipating policyholder of a stock company." The former has the legal right to elect directors and thereby control and direct the course of the company, to liquidate, to merge, to demutualize, to divest and wind up; that is, he is one of a group that, under the law, controls the direction of the company. The nonparticipating policyholder in a stock company has none of these rights. This is hardly "little fundamental difference"! Mr. Leckie, of course, is looking at the record, in which the participating policyholder of a mutual life insurance company, in fact, has not exercised these rights; he is not looking at the legal rights of the policyholder.

Mr. Leckie states that in a demutualization procedure, "under no circumstances should the participating policyholders at the time of demutualization receive shares equal to their so-called equitable share of the net worth of the company." In his conclusion, he states: "Nor can the policyholder be considered an owner in the sense of having any right to the assets of the company other than those that ultimately will be required to ensure the performance of his contract." Here Mr. Leckie is passing moral judgment, not legal judgment. Even this moral judgment reflects only one actuary's opinion. He should recognize that in the United States there are specific statutes which permit action that he abhors but that others, including myself, approve. In the United States there are at least thirty-two states that have statutes relating to the conversion of a mutual insurance company to a stock company, most of which specifically permit such a conversion.

Mr. Leckie appears to plead for a change in law, to the extent to which his comments are applicable to United States companies. Perhaps he will agree that the question is legal, not actuarial. The paper seems to support an action proposed by his own company, which action may have been aborted by the public acceptance of those principles of equity and rights so closely dealt with by statute in many states in the United States.

I have been involved personally in the "stocking" of a mutual insurer and the reinsuring of a mutual insurer into a stock insurer. It is practical to structure a plan for "stocking" a mutual insurer, a plan that recognizes policyholders' equity in an almost unassailable manner and provides complete assurance of the continuation of existing management for a stated period.

Mr. Leckie rejects a procedure that is defined under United States law and is acceptable to the public. He should not obscure the issues by presuming that actuarial judgments should preclude a company's exercising those rights granted by law. Perhaps he should seek to change the law.

APPENDIX

On the fourth page of "An Important Message for Policyholders of Northwestern Mutual Life," dated January 31, 1979, and accompanying the annual report to policyholders and the proxy statement, were the following pertinent comments:

Membership in Northwestern Mutual Life

As a mutual Company, Northwestern Mutual Life has no capital stock and, therefore, no stockholders. The policyholders are the owners of the Company, and are also its members.

Annual Meeting to Elect Trustees

At each Annual Meeting, the members elect fellow policyholders to serve on the Board of Trustees, which directs the operations of the Company.

ARDIAN C. GILL:

We are fortunate to have Robin Leckie's paper. He brings to the surface a number of issues regarding mutual companies that badly want deciding. More important, he subjects these issues to analysis and forthrightly takes positions on them. This provides the rest of us with the opportunity to rise in righteous wrath and to take other positions, not all of which, one may hope, are based on conventional wisdom. Mr. Leckie has largely avoided this himself, and it may seem to be carping to select one such lapse as a lead-in to this discussion. I refer to Section VII, 4, which states, "It will be fairly rare that a mutual company

wishes to become a stock company. In all likelihood, it will be to acquire the necessary additional capital to finance growth opportunities the company sees for itself. . . . Under no circumstances should the participating policyholders at the time of demutualization receive shares equal to their so-called equitable share of the net worth of the company." There have in fact been approximately one hundred demutualizations of life companies in the United States and about the same number of casualty company demutualizations. Perhaps this is a small number when we consider that there are more than eighteen hundred life insurance companies, but since there are only about one hundred and fifty mutual companies in the United States, the incidence of occurrence of demutualization assumes a proportion other than "rare." According to a paper by John Binning, former commissioner of the Nebraska Insurance Department, in 1970 there were twenty-five states that permitted demutualization by specific statute and only seven that specifically prohibited it. Approximately twenty-three states allowed merger of mutuals and stocks, which is another route to demutualization.

The same laws sometimes define to whom the surplus or other equity belongs, and, while they may be in conflict with the principle proposed by Mr. Leckie, they express a legislative intent very far removed from the suggestion that this equity should "under no circumstances" be distributed to existing policyholders. Thus, there is a substantial body of opinion to the contrary in a place where it counts—in the legislatures—requiring a demutualization process that distributes equity to policyholders in some form. I do not propose to discuss the merits of these opposing views or to take a position myself, except to express, *en passant*, a decided distaste for escheat. My purpose is, rather, to carry the process of demutualization one logical step further: if a mutual company can be turned into a stock company and if a stock company can be acquired, it follows that a mutual company can be acquired. The following paragraphs outline one hypothetical method of acquiring a mutual life insurance company and conclude with some reasons why that might be a reasonable thing to do.

Merger watchers may have noted that the recently aborted Union Central–Mutual Benefit merger attracted enough interest from three nonmutual life entities to cause them to offer to "acquire" the Union Central. As it turns out, Ohio has a reasonably specific statute on the subject of demutualization, including the determination of total equity in the company and to whom that equity must be distributed. Briefly stated, that statute requires the formation of a committee under the insurance commissioner's jurisdiction to determine the equity and pro-

vides for distribution of that equity to individuals who have been policyholders in the most recent three years. The formula for determining shares of that equity is related to reserves and premiums paid in that three-year period.

For discussion purposes, let us assume that we are operating under a statute such as Ohio's and that both the total policyholder equity and the individual policyholder shares of that equity have been determined. One hypothetical route to acquisition of a mutual company under these circumstances would involve the following steps:

1. Determine a desired surplus level for the surviving stock company. This may be the "target surplus" outlined in Mr. Leckie's paper or some other amount determined as adequate to finance the writing of new business and to reestablish the mandatory securities valuation reserve, deficiency reserves, and so on, to the extent that these are distributed as equity. (Old business is presumed to have sufficient margins to attend to itself.) Deduct this amount from the previously determined total equity.
2. From the balance determined in step 1 above, remove that part of the equity that has been determined as being derived from future earnings on in-force business. In practical terms this cannot be distributed in advance without creating an incentive to terminate the policies. This element can best be disposed of by sealing off the existing block of policies and agreeing to distribute all of its earnings in the form of dividends.
3. The remaining equity, after the deductions described in steps 1 and 2 above, plus 51 percent of the target surplus, will be distributed to the policyholders designated in the statute in the form of paid-up additions to existing policies. A tax savings may emerge in the year these are distributed as benefits, and there should be a continuing tax efficiency by reason of the removal of these amounts from surplus and their transfer to life reserves. The newly created paid-up insurances will be added to the encapsulated participating block and will also be participating.
4. The balance, which is 49 percent of target surplus, will be distributed in the form of common stock, although options may be offered to take either further paid-up increments to insurance of cash, the former on terms more favorable than book value and the latter on less favorable terms if necessary to reflect market values.
5. The acquiring company purchases common stock equivalent to 51 percent of the target surplus and may make a tender offer to purchase some or all of the balance of the common stock, offering a premium if it wishes a larger share of ownership.

By these steps, control passes from the policyholders to the acquiring company, but the total equity, and perhaps a premium, are distributed to the policyholders, and they are assured of all their future earnings in

the form of dividends. Thus they are considerably better off than they would have had any expectation of being if the company had remained mutual. The acquiring company, presumably, is satisfied with its bargain, so what at first blush might have appeared to be the "stealing of a mutual" has turned out to be a very satisfactory arrangement for all concerned.

To satisfy ourselves on this score, let us examine what is being purchased in this or any other life insurance company acquisition. (For this purpose reference is made to Mr. Samuel H. Turner's paper "Actuarial Appraisal Valuations of Life Insurance Companies," *TSA*, XXX, 139.)

The three elements of valuing an insurance company that Mr. Turner identifies are the following:

1. *Business in force.*—In our hypothetical case the business in force has not been purchased by the acquiring company but rather has been left in a segregated fund account with the expectation that all of its earnings will be paid to the policyholders.

2. *Capital and surplus.*—The capital and surplus and other items in the nature of surplus that have been assigned to equity have been given to the policyholders, so far as they were derived from the mutual company, and the additional capital and surplus have been paid in dollar for dollar by the acquiring company.

3. *Existing structure* (or the power to produce business).—The existing structure of many insurance companies is often of little value under Mr. Turner's approach to its valuation, which, briefly stated, is to discount the expected future statutory profits on business yet to be produced, using the investor's desired rate of return on investment. Where a mutual company is being converted to a stock company and acquired, we must make an adjustment to the usual valuation and recognize that the field force will not have the same capacity to produce exclusively nonparticipating insurance after having been thoroughly grounded in the virtues of participating policies. The acquiring company may be faced with attrition and excess expenses in converting the portfolio and the agents to a totally new basis, and it would be surprising if the expected business produced a positive present value on any reasonable expectation as to return on investment. The absolute amount of this negative value, plus any positive amount assigned by the valuing committee for the "plant," may be viewed as an added premium over the company's book value. This premium is shared between the policyowners who have common stock and the acquiring company.

When examined in its several components as outlined above, the purchase of a mutual either through its conversion into a stock company with subsequent purchase or through merger into a stock company does not at all imply inequity to the policyholders or purchase of the company

at bargain rates. To the contrary, the acquiring company is paying a premium for the acquisition and must look to an improvement in future performance to justify the purchase. In view of this, one may question why an investor would be willing to pay the implied premium. The answer lies in the current state of the market for purchase of life insurance companies; recent sales have registered prices between 1.5 and 2 times GAAP book value and multiples in excess of 15 times GAAP earnings. In the purchase of a mutual company, the premium may indeed be substantial, but it applies only to the value of the existing enterprise and does not similarly apply to the value of the business in force. On the other hand, what is purchased is likely to produce a rather low level of statutory profit, tantamount to the expected results if it were possible to form a new company that had at the outset a large field force. Thus the purchase of a mutual company may not be a great bargain, but it at least limits the premium over actuarial value that must be paid, as outlined above.

It is fair to ask why the mutual company (and here I refer to Mr. Leckie's concept of "the enterprise [as] a kind of trust fund" rather than to the policyholders as owners) would wish to consider demutualization and acquisition by an investor. Some of the reasons that come to mind are the following:

1. The company is having difficulty maintaining surplus at desired levels. (In this event, the method above will need to be modified.)
2. The company may find itself locked into a rather low rate of return on current investments, which makes its illustrative net cost noncompetitive. The effect of the acquisition is to assign most of the current assets to the old policyholders and to permit new-product pricing to be based on interest rates closer to those currently available.
3. If the acquisition is accomplished through merger, the mutual enterprise may benefit from expansion into new territories or into new lines of business.
4. Tax advantages, in addition to those that derive from the above suggestion of creating additional insurance amounts, may occur in the future in very substantial amounts. Mutual companies are rarely in a position to deduct all the dividends in determining their taxable income. The converse of this is that such a company may increase its gain from insurance operations to the extent of undeducted dividends without an increase in its taxable income.
5. A small mutual having difficulties surviving may benefit from the infusion of additional management skills, computer facilities, and other factors to permit it to expand.

In summary, it is not beyond belief that the conversion and acquisition of a mutual company can be accomplished with benefit to the policy-

holders, the public, and the management of the company itself. I hasten to add that this situation is purely hypothetical. I know of no actual case where this route has been used or even proposed; indeed, many other considerations (purchase-GAAP, for example) must be dealt with before a practical approach emerges.

JOHN C. MAYNARD:

The laws and regulations that deal with the rights of participating policyholders in a mutual life company are sparse. The federal Canadian and British Insurance Companies Act in Canada provides for the election of directors by "members of the company" who are persons holding participating policies upon which no premiums are due. This definition may have been a good one many years ago when the business of mutual life companies was comprised largely of participating permanent ordinary life insurance written in one country. Today these companies are writing many other varieties of business, including individual policies in the form of nonparticipating term, nonparticipating annuities, nonparticipating health, and group policies that provide coverages over a wide and growing range. Many do an international business. Quite clearly the definition of *member* is inadequate for the election of directors who are representative of policyholders. This is understood and changes are being considered, but because of the difficulty of the matter, the solution to the problem of adequate representation of policyholders may not lie only in law and regulation.

Apart from the representation of policyholders in the governing structure, the fair allocation of the company's resources among different kinds of policyholders is more difficult as business gets more complex, financial conditions become more changeable, and competitive pressures increase from both inside and outside the life insurance business. In particular, the problems of distributing surplus and making dividend illustrations fairly for ordinary business are larger than ever and are made more urgent by a growing public interest in them.

What does a participating policyholder expect of the company? The following list is suggested:

1. That the company will remain strong financially, so that guaranteed benefits will be paid.
2. That he will receive advice about his insurance program and reasonable service in collections, disbursements, and policy options.
3. That he will be treated fairly in relation to other policyholders, old and new, and to the staff and representatives of the company.
4. That he will be charged a low net cost for the insurance services received.

In the interpretation of the last of these expectations, it should be realized that capital has been invested in the enterprise and is needed for its continuation. The capital at any time can be thought of as the excess of assets held over the amount needed to carry existing business to maturity, without acquiring new business. In an ongoing enterprise, capital acts as a reserve for contingencies and as a fund for financing plans to keep the enterprise going. A policyholder joins a healthy enterprise that has existing capital. He should expect that in the allocation of dividends he will be charged with amounts reasonably needed to maintain capital during his association with the company. In the interpretation of reasonable need, the policyholder should not expect extreme treatment. One extreme would be the return of capital to him by winding down or terminating the business. The other extreme would be heavy capital charges resulting from rapid growth or the acquisition of business demanding large amounts of capital.

The task of managing a mutual insurance enterprise is to keep the enterprise going while striving to meet the expectations of policyholders. The task can be thought of as exercising stewardship over surplus and contingency funds. In the paper the useful suggestion is made to divide surplus into operational surplus and development fund. The operational surplus for associated lines of business can then be combined with reserves for these lines to form a fund. Changes in the fund can be traced from year to year. Temporary or permanent transfers to or from the development fund can be made in recognition of unusual reserve strain resulting from rapid growth, or for other reasons. The introduction of the development fund as a temporary buffer permits objectives to be set for each fund and facilitates the monitoring of results. These concepts can be used in the preparation of statements that can be used for setting objectives and measuring performance throughout the company. The statements can also be a unifying link with other parts of the management system—for example, the procedures used in the pricing of new services, and the setting of expense objectives.

In the paper it is suggested that planning can be done by setting two out of the following three variables: target surplus ratio, long-term growth rate, and charges to policyholders to maintain surplus. The third variable then becomes defined. However, this emphasis on a surplus ratio that may not be reached for many years and a growth rate that is set and presumably aimed at for a long period seems to be unrealistic. In practice, it is probable that surplus targets and target growth rates will be set for short periods, such as five or ten years. Plans to meet these targets in the near term can then be made after allowing for all factors that affect the business, in addition to the three variables referred to.

In the section on "Merger," the author makes this statement: "The author contends that the surplus held by the company at any given time should have no significance to policyholders except to the extent it enhances management operational performance. The policyholder should be affected only by the *target* surplus level, the long-term growth rate, and managerial performance." The emphasis on the policyholder's interest in target surplus, as opposed to current surplus, is surely misleading. If two companies are similar except that one has more surplus, then this one company can do more for its policyholders in the form of cost or service than the other.

The following analysis is similar to the analysis in the paper but is meant to show the relation between growth rate, interest rate, operating gains, and current surplus, if planning targets are set to increase or decrease surplus in the near term.

Let us assume for one line of business that, at year t,

S_t = Actual surplus;

L_t = Liability, with annual growth rate g_t;

E_t = Annual gain from all operating sources, excluding net earnings on surplus funds;

i_t = Annual rate of net earnings on surplus funds;

$e_t = E_t/L_t$;

$R_t = S_t/L_t$

Then

$$S_{t+1} = S_t(1 + i_t) + E_t = S_t(1 + i_t) + e_tL_t .$$

Let us also assume that surplus strength in relation to size can be represented reasonably by the ratio R_t. This assumption is probably reasonable for the ordinary insurance line but not for group lines. Then

$$R_{t+1}L_{t+1} = R_{t+1}(1 + g_t)L_t = R_tL_t(1 + i_t) + e_tL_t ,$$

or

$$R_{t+1} = \frac{e_t + R_t(1 + i_t)}{1 + g_t}$$

and

$$R_{t+1} - R_t = \frac{g_t - i_t}{1 + g_t}\left(\frac{e_t}{g_t - i_t} - R_t\right).$$

If

$R_{t+1} - R_t > 0$, surplus is growing in strength.

$R_{t+1} - R_t = 0$, surplus is at the same strength.

$R_{t+1} - R_t < 0$, surplus is decreasing in strength.

The requirement for $R_{t+1} - R_t \gtreqless 0$ is shown below for the three situations that connect the growth rate and net earning rate.

Situation	Requirement
$g_t > i_t$	$\frac{e_t}{g_t - i_t} \gtreqless R_t$
$g_t = i_t$	$e_t \gtreqless 0$
$g_t < i_t$	$\frac{-e_t}{i_t - g_t} \gtreqless R_t$

The topics discussed in the paper cover a wide range and are of great importance. Decisions on the topics need not be made by actuaries, but actuaries can play a part, along with others interested in the enterprise, by quantifying the issues, outlining alternatives, and giving their advice.

ROBERT C. TOOKEY:

As Mr. Leckie indicated, his paper was not intended to be a panacea for all current questions pertaining to mutual life insurance companies. It was intended to provide a framework for surplus management, a "track to run on," so to speak.

He has attained this objective laudably. The conceptualization of the three semi-independent variables (g, e, and R as defined in the paper) provides the desired framework.

The following comments relate to the section on mergers and acquisitions. The author accepted the Kayton-Tookey concept of fund accounting under which separate funds would be recognized for three different groups: (1) prior policyowners of the surviving company (S), (2) prior policyowners of the retiring company (R), and (3) new policyowners of the merged company (RS). In the merger situation it is implied that the surplus level of the two companies at the time of merger should not be rigidified for merger purposes but rather should be subject to a continuing surveillance for an indefinite period to account for prior overcharges and undercharges among different groups of policyowners. This would require knowing the target surplus levels, surplus charges, undercharges, and overcharges. The records for such surveillance might not be available in a current merger situation, although that could change in the future. Furthermore, state insurance department participation in surveillance would be a very difficult service to obtain because of the public support for economies as indicated by the "Proposition 13 movement." Merging two mutual companies is an enormously complicated task; to add the additional burden of surplus surveillance for Groups R and S would complicate the picture further.

There are some compelling reasons for mutual companies to consider a merger or, stated another way, for one mutual company to consider acquiring another. A chief executive of one mutual company that has been through a strenuous acquisition effort, which ultimately aborted, concluded that mutual mergers were virtually unaccomplishable. One week after he so averred, Union Central and Mutual Benefit announced their "engagement." We wish them well.

The inclusion of nonparticipating policies in a mutual life insurance company's ratebook could cause more problems than those it might be intended to solve. The better approach could be simply to form a stock life company, license it in the states in which the parent operates, give it a name similar to that of the parent, and let the parent's producers write the nonparticipating product whenever appropriate. Furthermore, a mutual company wishing to offer an individual life insurance policy that would compete successfully with a nonparticipating policy can be innovative; for example, it can offer a very low premium policy that, though entitled to share in the surplus earnings of the company, probably would receive only token dividends if any. This would be made clear to the applicant, and the policy dividend provision might even have one added sentence to the effect that, although the policy participates in the surplus earnings of the company, it is not anticipated that any dividends will be payable. Another approach might be to offer a whole life policy in which only one-half the expected face amount is guaranteed and the other half is to be provided for by paid-up additions, probably on a term basis. This approach has been used by more than one of the very large mutual companies. In any event, it seems difficult to justify writing individual nonparticipating insurance in an authentic mutual company without precipitating further problems.

Most of my other reactions to Mr. Leckie's paper have already been covered by the discussions of the many learned Fellows who responded to this excellent contribution to actuarial literature.

O. A. REED:

There are a number of statements made in this paper that I do not agree with. For example, I do not agree that "charges made to policyholders to maintain the enterprise should remain essentially unchanged over time," nor do I agree that "policyholders should not benefit from or be hurt by unusual situations." It is difficult for me to conceive of any but the most unusual operating environment under which these statements could be appropriate. I also have difficulty appreciating the author's ideas on equity; for example, if target surplus is inviolate and a mutual

company wants to get into the cumputer services business or the mutual fund business, where does the financing come from?

The section on "Surplus Targets" left me with a feeling of irritation. It is *axiomatic* that one can define target surplus to be anything one pleases, and, if one pleases, independent of the current level of surplus. However, this does not mean that in real life the target surplus so defined can be attained. If the current surplus is higher than the target surplus, it is absolutely certain that the target surplus can be attained. However, it might be difficult or impossible for a currently low surplus to be increased to a higher target level.

Only nonparticipating policies are in the category such that their *target* contributions to surplus will not be affected by actual emerging experience—assuming that the company stays solvent and lives up to its guarantees. However, their *actual* contributions to surplus will be equal to the target contributions only if expected experience is realized.

Consider the formula analysis in Section III of the paper. In practice the value of n is not infinity, and so, as one would expect in real life, S^1_{t+n} is *not* independent of S^1_t. For example, suppose $g = 0.1$, $i = 0.05$, and $n = 25$. Then

$$\frac{S^1_{t+n}}{L_{t+n}} = 0.3125\left(\frac{S^1_t}{L_t}\right) + 0.6875\left(\frac{e_1}{g - i}\right).$$

That is, the effect of the initial surplus ratio can be expected to be felt for quite a few years.

Following equation (3), the discussion slips from that of target surplus to surplus in general. If this was intentional, the transition would not appear to be justified unless it is postulated that surplus equals target surplus. If the assumption is made that target surplus is the sum of specific risk-related pockets of surplus, it seems a natural corollary that there is in addition other miscellaneous surplus; that is, S^1, S^2, . . . would be appropriated surplus and one would also expect that there would be unappropriated surplus.

One of the main purposes of the paper is of course to get people interested in thinking about what is an appropriate level of surplus (for a mutual company). It is to be hoped that the author has succeeded.

LINDEN N. COLE:

Mr. Leckie has tackled a hard subject, and he is to be complimented for his pioneering analysis of an area that does not lend itself to precise actuarial treatment. The subject merits continuing study. I wholeheartedly agree with his general conclusions about the nature of surplus

in a mutual company, which provides the financial base for the company's marketing efforts and enables it to obtain the new policyholders that it needs to continue in the future.

In this discussion, I wish to suggest that a theoretical required annual rate of contribution to surplus that is independent of the current amount of surplus may not be adequate in many situations. I also wish to point out that the final decision as to the appropriate total rate of contribution in these situations will depend very much on the current amount of surplus.

Two extreme cases demonstrate that the total rate of surplus contribution may be affected by the current level of surplus. If a catastrophe exhausted statutory surplus completely, the annual surplus contribution rate would have to be increased drastically. At the other extreme, should surplus reach the upper limit allowed by New York law, the annual surplus contribution rate for a New York company might have to be decreased. Thus, there can be situations in which the current level of surplus affects the surplus contribution rate.

One way of summarizing the various reasons for having surplus might be the following. The purpose of holding surplus is to keep the probability of statutory bankruptcy at a very low level. If a company's current surplus is low relative to its liabilities, its probability of bankruptcy over a specified period of time is higher than it would be if its surplus were not so low.

This rationale suggests a different type of required surplus contribution, to be added to the contribution described in Mr. Leckie's paper. Since avoidance of statutory bankruptcy is an overriding priority, this additional contribution cannot be viewed as optional, and since the contribution rate should be raised when the probability of bankruptcy increases, it is clearly a function of the current level of surplus. If the probability of bankruptcy can be determined as a function of various levels of surplus, an appropriate contribution rate can be determined for each level, increasing when the probability rises and decreasing when the probability drops. It will completely disappear when the surplus increases to the point at which the probability of bankruptcy is acceptably negligible. If these probabilities cannot be determined, surplus-to-liability ratios may serve instead.

Such a contribution would not replace the one described in the paper, which is a perpetual charge determined as a function of interest rates, growth rates, and the target surplus ratio. It would accomplish something that the perpetual contribution does not, however, which is to

move the company out of danger rapidly when a dangerous situation is recognized.

An analogous procedure is suggested by the formula for annual contributions required in the United States for the bond and preferred stock component of the mandatory securities valuation reserve (MSVR). The MSVR maximum may be viewed as the level at which the probability of exhausting the fund is acceptably negligible. It is computed each year as a function of covered assets. The required annual contribution is a function of the relation of the current amount in the component to the target amount (the maximum). If the ratio is less than 50 percent, approximately 1 percent of the target amount must be contributed. If the ratio is between 50 and 100 percent, only one-half of this must be contributed. If the current amount is equal to the target amount, nothing need be contributed. Under the MSVR theory, the attainment of the maximum reduces the probability of the reserve's being exhausted to an acceptably negligible level, so that the only future contributions required relate to growth (until the next loss on a bond or preferred stock).

The MSVR situation is much simpler than the surplus situation. In addition to illustrating a variable contribution, however, it illustrates a resumption of contributions, or even of double contributions, when the component experiences losses. The surplus of a life insurance company is also liable to experience losses that are not likely to be recovered. A variable contribution rate designed to decrease the probability of bankruptcy, whether expressed in terms of that probability or of the surplus-to-liability ratio, will allow the rebuilding of surplus after such a loss and will serve to lower the probability of bankruptcy to an acceptably negligible level much sooner than if a level contribution rate is the only one used. Such a variable rate, which is responsive to the current level of surplus, should be a part of a mutual company's surplus strategy.

As an afterthought, how is the actuary to explain his surplus strategy to a nonmathematical management, if he proposes only the level rate of contribution that is independent of the current level of surplus? The following exchange is possible:

PRESIDENT: If we adopt your proposed annual surplus contribution rate, Mr. Actuary, how many years will it be until I can announce to the Board that we have reached our surplus target?

ACTUARY: Mr. President, my formulas are so cleverly designed that, in the absence of a favorable statistical fluctuation, we will *never reach the target.*

PRESIDENT: Mr. Actuary, you are pushing me to the limit!

ACTUARY: Exactly, Mr. President.

N. E. HENRICKS:

The concept of target surplus and its determination from the simple formula $R = e/(g - i)$ offers a new and useful tool in the establishment of a surplus program. Its usefulness can be seen readily in the situation where a company already has adequate surplus and wishes to work out a plan for maintaining that surplus at a desired level.

I was particularly intrigued by the generality of the formula, that is, the fact that R is independent of the current level of surplus. The question that this brought to mind was: "Suppose that you are *not satisfied* with the *current* surplus position; how long would it take for the surplus to reach its target—or, say, 95 percent of its target?"

After examining the question by looking at some actual numbers, I came to the conclusion that it is important to consider the rate at which a company plans to contribute to its surplus, since this has a strong bearing on how quickly a company's surplus will converge toward target. For example, in using the formula $R = e/(g - i)$, it is quite possible for a company to be in a situation where it would have to put up 85 percent of the target surplus now in order to reach 95 percent after fifty years! If the factors entering the formula imply that kind of requirement, and the company can put up only 50 percent of the target now, then it likely will want to plan for contributions that temporarily exceed those derived directly from the formula.

In order to examine the question of convergence, I started with Mr. Leckie's equation

$$S_{t+1} = S_t(1 + i) + eL_t$$

and assumed that S_t represented surplus that was "on target," that is,

$$S_t = RL_t .$$

Now assume that S_t^1 is below target, in which case

$$S_{t+1}^1 = S_t^1(1 + i) + eL_t .$$

If we let r_{t+1} represent the ratio of actual surplus to target surplus, then

$$\begin{aligned} r_{t+1} &= \frac{S_{t+1}^1}{S_{t+1}} \\ &= \frac{(RL_t/S_t)S_t^1(1 + i) + R(g - i)L_t}{RL_t(1 + i) + R(g - i)L_t} \\ &= \frac{(1 + i)r_t + (g - i)}{1 + g} . \end{aligned}$$

It is interesting to note that the rate of convergence depends only on g and i.

According to the illustration in Table 1 of this discussion, the rate of convergence is relatively unaffected by changes in g for a given $g - i$. However, as illustrated in Table 2, the rate of convergence shows a strong dependence on changes in the factor $g - i$. Although it takes one hundred and twenty-four years to build up to 95 percent of target if $g - i = 0.025$, it takes only thirty-four years if $g - i = 0.100$. In each of the tables illustrated, g is the annual rate of growth for the parameter L, and i is the annual rate of interest earned on the surplus S. The values for g and i have been chosen to represent a range of numbers that might reasonably occur in practice.

Table 3 looks at the question from another point of view. The formula

$$r_{t+1} = \frac{(1 + i)r_t + (g - i)}{1 + g}$$

was used to determine what percentage of target surplus is needed now so that surplus will reach 95 percent of target after a given number of

TABLE 1

NUMBER OF YEARS TO REACH x PERCENT OF TARGET SURPLUS FOR SELECTED VALUES OF g, GIVEN THAT $g - i = 0.025$; INITIAL SURPLUS = 0

x	g		
	0.050	0.075	0.100
25	12	12	13
50	29	29	30
75	58	59	60
95	124	127	130

TABLE 2

NUMBER OF YEARS TO REACH x PERCENT OF TARGET SURPLUS FOR SELECTED VALUES OF $g - i$, GIVEN THAT $g = 2(g - i)$; INITIAL SURPLUS = 0

x	$g - i$			
	0.025	0.050	0.075	0.100
25	12	6	4	3
50	29	15	10	8
75	58	30	21	16
95	124	64	44	34

TABLE 3

PERCENT OF TARGET SURPLUS NEEDED NOW TO REACH 95 PERCENT OF TARGET AFTER n YEARS, GIVEN THAT $g = 2(g - i)$

n	$g - i$			
	0.025	0.050	0.075	0.100
10	94%	92%	90%	88%
20	92	87	80	70
35	88	74	46	0
50	83	48	0	0

years. In one example, where g exceeds i by 10 percent, no initial surplus is needed in order to reach 95 percent of target surplus within thirty-five years. In sharp contrast is the situation where g exceeds i by $2\frac{1}{2}$ percent. For that case, in order to reach 95 percent of target within thirty-five years, Table 3 shows an initial surplus requirement of 88 percent of target.

These illustrations highlight the importance of examining the rate of convergence implied by the difference between g and i. While the formula $e = R(g - i)$ might suggest a low contribution rate e to fund the target surplus, it may be necessary to increase the contribution rate temporarily to achieve a satisfactory rate of convergence.

I would like to conclude these remarks by praising Mr. Leckie's fine paper. In particular, the concept of target surplus offers a useful theoretical tool that should prove to be a helpful reference in developing a company's long-term financial plans.

LOUIS GARFIN:

Robin Leckie's comprehensive paper brings into sharp focus a number of issues of great importance in the operation of every mutual life insurance company.

The question of the rights of the "members" of a mutual life insurance company has been dealt with piecemeal by statutes, by court decisions, and by dividend practices of companies and their actuaries, but a unifying description of those rights has been difficult to find. In recent months consumerists and federal authorities in the United States have demonstrated active concern with those rights. an objective airing of underlying principles is both timely and important.

Also, during a period in which the common indexes of the level of sur-

plus, namely, the ratios of surplus to assets or to liabilities, are declining for many companies, actuaries are seeking answers to the question, "What is a proper or adequate level of surplus for my company?"

It has been fairly well established by court decisions in the United States that a mutual policyowner's financial interest in his company is limited to the benefits provided by his contract. One of those benefits may be the right to share in divisible surplus, but this is limited to dividends as determined by the company. Mr. Leckie's analogy with an ongoing trust fund to which each policyowner makes a permanent contribution is both apt and useful for describing this relationship.

In addition to these financial rights, the mutual policyowner is usually but not always a member of the corporation with voting rights in the selection of directors. My company (short for "the company by which I am employed") is possibly a unique exception. It was mutualized on behalf of the policyowners "of the life and annuity classes," undoubtedly because of its history. As a result, there is a large class of health insurance policyowners who are not members of the corporation and whose policies are not participating (although the group policies may be eligible for experience rating). At the same time, the owners of life insurance and annuity policies that had been issued as nonparticipating are members of the corporation. As a matter of company policy, those policies were made participating to the extent that there is divisible surplus arising from their operation. The fine point is that participation may be related to membership rather than simply policyownership.

This line of reasoning flows from the concept that a class of members, by proper use of its voting rights, can influence company policy and thereby obtain appropriate participation in divisible surplus. This represents a pragmatic definition of entitlement. Common practice among United States mutual companies recognizes this entitlement by issuing only participating policies to members—with some exceptions and some borderline situations. A frequent exception is in the issue of nonparticipating single premium annuities. Another, well recognized, is extended term insurance. The borderline is approached when a term insurance policy, for example, is issued on a very low premium and low dividend basis. The limiting situation is a policy with zero dividends contemplated at issue, but with eligibility for participation if future experience justifies it.

The practice among Canadian companies appears to be different, with mutual companies often issuing nonparticipating policies. Again, this may reflect the history of the companies. It is not clear whether membership rights attach to the nonparticipating policies. Presumably they do not. This may be implied by Mr. Leckie's unqualified statement that

mutual companies should be able to write nonparticipating business if it is done properly. His rationale would, in effect, contemplate the nonparticipating (nonmembership) business as a subsidiary operation for the benefit of the participating policyowner-members. This seems to be fair enough but, as he points out, requires careful accounting and allocation of expenses and investment income.

Mr. Leckie's approach to the establishment and achievement of surplus targets is based upon or develops several concepts that appear throughout the paper:

1. Policyholders reasonably should expect that growth rates should not affect policyholder contributions to surplus.
2. The charges made to policyholders to maintain the enterprise should remain essentially unchanged over time.
3. The surplus target can be independent of the actual surplus held by the company at any given time and of the company's actual growth rate.
4. The participating policyholders should be permitted to make only those decisions that maintain the organization essentially in a form that does not change their expectation.

Taken together, these concepts pose certain problems in practice and perhaps even in principle. As stated in the paper, the mutual policyholder is entitled to insurance at cost. That is presumably his basic expectation. But there is also an implicit expectation that the cost will be less than originally contemplated, including a lesser contribution to surplus from his policy (if he or she really expected that there would be any such contribution). This is not necessarily an unreasonable expectation.

If the company fails to manage successfully the delicate relationship among the target surplus, the growth rate, and the policy contribution, or perhaps the basic distribution vehicle, the dividend formula, it is quite possible that the target surplus may be achieved too soon, or even exceeded. Such a condition, it would seem, ought to be corrected, possibly by reducing policy contributions. Conversely, the policyholder must be prepared to accept a greater charge if the surplus target should become virtually unattainable otherwise. Excessive growth might give rise to such a condition.

Stated another way, to the extent that the intended surplus charge is not realized, equity to other policyholders requires that subsequent charges should be adjusted accordingly.

A company's surplus target may be defined as the sum of segmented targets for the various risks to which it is exposed. But ultimately all of the surplus is available for the protection of all the policyholders. To the

extent that any one segment deviates too greatly from the intended path for achievement of its surplus target, the other segments of the company are affected. Most dramatically, a deficit position for a line of business is a strain on the resources available to the rest of the company, and the deficit should be made good if at all possible.

Mr. Leckie has defined *statutory surplus* as assets less statutory liabilities less any contingency funds. For the purpose of defining surplus available to cover risk, including investment risk, it would seem appropriate to include the mandatory securities valuation reserve (in the NAIC form of statement), since it is specifically available to cover asset losses. Also, contingency funds (below the line) are customarily considered part of surplus in United States practice. Even though they are designated to cover specific categories of risk, they are so designated by action of the board of directors and can just as well be released for other purposes by the board in case of need.

Actuaries involved in the affairs of a mutual company will find a great deal to refer back to in Mr. Leckie's paper. It provides an approach to surplus planning, some significant concepts to consider, and, most important, a great deal of food for thought. Thank you, Robin Leckie.

C. L. TROWBRIDGE:

The subject matter of Mr. Leckie's fine paper, particularly those portions dealing with the size of surplus and the interplay between surplus and growth, has been a badly neglected subject in actuarial literature. Only a 1967 *TSA* paper by this discussant, and two less formal presentations by D. C. Cody and R. F. Link in Volume III of the *Record*, even touch on these very important subjects. Mr. Leckie is to be congratulated indeed on the forthrightness with which he faces this difficult, but critical, area.

Fortunately, there is other related work going on. The Committee on Valuation and Related Problems has the entire balance sheet of an insurance enterprise under critical examination and is presenting a preliminary report at the same Society meeting where Mr. Leckie's paper is scheduled for discussion. It is good that these efforts are so closely concurrent, because either can be discussed in the light of the other.

Very early in his paper the author points out the superficiality of the commonly held view that the policyholder of a mutual company stands in the same position as the stockholder in the typical profit-making corporation. Because there is no other group with a better claim, it is sometimes assumed that a mutual insurance company is *owned* by its policyowners. Mr. Leckie's view is better. The policyholders have the stock-

holders' role, in the sense that they elect the board of directors and through this voting right control (at least theoretically) the management; but the policyholders do not "own" the net worth of the mutual insurance company, at least in any effective sense. Whatever ownership there is disappears when the policyholder ceases to be one, and it can neither be bought or sold. A stockholder, on the other hand, can realize his equity or ownership rights by means of his right to sell.

A mutual insurance company is organized on the cooperative principle, as are several other kinds of institutions. Policyholders are essentially customers, who have associated themselves in order to obtain insurance and to pool risks. The management is accountable to the policyholder-customers and is under obligation to preserve equity among the various policyholders. In one sense I find myself disagreeing with the author when he states: "There is little fundamental difference in the ownership rights between a participating policyholder of a mutual company and a nonparticipating policyholder of a stock company." The latter is a customer only, and has no special right to equitable treatment as between himself and the other customers. If the right to equitable treatment vis-à-vis other customers is an ownership right, then the policyowner in a mutual company has at least this aspect of ownership.

I am a bit surprised by the author's contention that a mutual life insurance company is on solid ground in offering nonparticipating insurance or annuity products. It would seem that the two kinds of policyholders have somewhat different ownership rights, and possibly conflicting interests. Participating insurance sold by stock companies has always been something of an anomaly. Nonparticipating business sold by a mutual company has some of the same characteristics. The Canadian situation may be different, but some United States jurisdictions would question a nonparticipating policy issued by a mutual life company.

Turning now to the elusive subject of surplus, the author points out the substantial differences between what he calls "statutory" surplus and "internal surplus." His example calculates the first as 62 units, the second as 226 units, both with respect to assets of 1,226 units. The 164-unit difference is made up of 119 units of statutory liability in excess of what he considers a more realistic internal liability, and 45 units of additional reserves, at least some of which is in the nature of an investment reserve (or MSVR). The surplus-to-liability ratio varies from 5.5 percent on a statutory basis to 22.6 percent internally. The surplus-to-asset ratio (which I prefer, for reasons to be elaborated on later) is 5.1 percent on a statutory basis, internally 18.4 percent. How can these immense differences be rationalized? Obviously provision for some of the con-

tingencies to which an insurer is subject is held within the statutory liability but outside the internal one.

We must first ask ourselves the straightforward question, What is surplus for? Only then can we get somewhere as to the related question, How large should surplus be? If our answer as to the reason for surplus is "to protect the solvency of the enterprise against the risks to which its financial health may be subject," we at least have a starting point. The Committee on Valuation and Related Problems thinks of the components of surplus, which it views primarily as an aggregate contingency reserve, to be essentially three: C_1, a provision against asset depreciation; C_2, a provision against pricing inadequacy; and C_3, a provision against variation in interest rates. The problem in clarity and understanding is that the conservative view of the balance sheet called for by statutory accounting tends to treat some or all of C_1, C_2, and C_3 as additions to liabilities rather than as components of surplus. From Mr. Leckie's definitions it is clear, for example, that the MSVR (or other statement of C_1) is outside surplus when he views the balance sheet on a statutory basis but is a part of surplus on the internal set of books. C_3, here a protection against an interest rate fall, has also been smuggled into the definition of statutory liability by the use of a conservative interest rate in the valuation of the liabilities.

The author eventually establishes a target for surplus in the form $S = f_1L + f_2(F - L)$. He thinks of L and $F - L$ as the major parameters. The first term is associated with the asset risk, that designated by the Committee on Valuation as C_1. Although it is true that liabilities (L) and assets (A) are of the same order of magnitude, it seems strange to me that the parameter here is L rather than A. To the extent that the purpose of this portion of surplus is to hedge against asset loss, it would seem that S should be expressed in terms of assets. A is more tractable as well, as the various definitions of L imply.

There is a similar conceptual difficulty with respect to the $f_2(F - L)$ term. If our focus is entirely on individual life insurance, and if our concern is largely that of protection against some kind of mortality catastrophe (such as epidemic, nuclear event, or war), then Mr. Leckie's formulation makes sense. But the risk of loss in insurance (as opposed to investment operations) is much broader. The committee views C_2 as a hedge against pricing inadequacy of all forms, whatever its cause and in any product line. With this orientation, we think of $F - L$ being replaced by premium, except for the special case of individual life insurance, where it is replaced by something akin to a yearly renewable term premium for the net amount at risk.

Mr. Leckie goes to considerable effort to justify growth, as being in the best interests of the policyowners even if there is some cost resulting from the additional surplus needs. A justification based on lower expenses, which in turn depends upon a belief in economy of scale, is far from proved, but most of us believe in reasonable growth even if unit expenses are no lower. In inflationary times a growth of any parameter expressed in current dollars is inevitable, unless the enterprise is to atrophy in real terms. Moreover, the striving for an increased market share, which if successful must necessarily mean higher than industry growth rates, is natural to the business world. The problem of determining a growth rate that is sustainable, will satisfy the natural desire to grow faster than the competition, and yet will not cost the policyowners too much is a tough one indeed. Mr. Leckie helps by pointing out the trade-offs; but few will be satisfied with his general conclusion that growth in accordance with those rates observed for the industry in the past is a reasonable guide.

Mr. Leckie's discussion of the tension between surplus and growth shows that he too is perplexed by a problem that has baffled many. It is an indisputable fact that a surplus ratio goal R, an annual surplus contribution e, and the excess of the growth rate g over an interest rate i, are linked by the equations

$$e = (g - i)R\,, \quad R = e/(g - i)\,, \quad g - i = e/R\,.$$

Management can try to determine any two of e, R, and $g - i$, but is forced with respect to the third. Especially if surplus goals are ambitious and growth rates are high, e will be large enough to affect price, which in turn can be expected to lower g, if insurance products are at all price-sensitive. These equations constitute a kind of limit on growth. The author demonstrates by well-chosen examples.

I have some trouble, therefore, with the second of Mr. Leckie's criteria—namely, that changes in growth rates should not affect policyholder contributions. If growth rates were reasonably stable over time, the policyholder contribution to surplus could be set on an average growth rate, and variations from the surplus goal would be relatively small. Suppose, however, that the historical growth rate accelerates. Then either the policyholder contribution to surplus must be increased or the surplus goal lowered. There is no real alternative. When we recognize that high rates of inflation can be expected to drive up the growth rate of any parameter expressed in dollar terms, we must appreciate that it will be difficult to meet even reasonable surplus goals unless inflation is brought under control.

It would be interesting to see how the author would handle vastly different growth rates by product line. Assume that individual life insurance liabilities are growing at 6 percent and annuity liabilities at 12 percent, and that $i = 5$ percent. If the surplus goal for both is 10 percent of liabilities, would Mr. Leckie charge within the pricing 10 percent of (6 − 5) percent, or 0.10 percent, of liabilities on life insurance, and 10 percent of (12 − 5) percent, or 0.70 percent, on annuities? Whether or not to socialize across product lines with sharply differing growth rates is a matter of considerable interest, especially in multiline companies. Where do considerations of equity among policyholders lead us?

There are two points that the author makes which are obscure to me.

1. It is not apparent why internal liabilities should grow at a slower rate than statutory liabilities. If they do, internal surplus would seem to grow faster than statutory surplus, and possibly faster than assets. I would think it more likely that all increase at approximately the same rate.
2. Nor is it immediately apparent that the investment risk is lower on new-money products than on those based on the distribution of aggregate interest. Perhaps it is the disintermediation problem that the author has in mind. It seems to me that the terms on which money can be withdrawn are the critical issue, rather than the technique for interest distribution.

The Society of Actuaries is indebted to Mr. Leckie for his fine paper on an important topic. The paper should give rise to thoughtful discussion. The same can be said for the preliminary report of the Committee on Valuation and Related Problems, which is being exposed to actuaries at about the same time. The theoretical basis for the balance sheet of an insurance enterprise has been too long neglected. Perhaps we now see a glimmer of light at the end of a long tunnel.

PAUL E. SARNOFF:

Mr. Leckie's paper presents an interesting mathematical approach to the growth of surplus in a company whose dividend philosophy is based on the concept of the "permanent contribution to surplus."

I share Mr. Leckie's view that the main use of surplus is to absorb unexpected fluctuations in experience, such as a sudden decline in the statement value of invested assets or a sudden upward fluctuation in mortality rates. Changes in the trends in various experience factors, on the other hand, should be met by adjustments in dividend scales and premium rates.

I also agree with the concept that each generation of policyholders should leave the company no worse than when that generation entered the company, and it is my view that classes of insurance of a relatively

short-term nature, such as term insurance and endowment policies, should make a *long-term* (but not necessarily permanent) contribution to surplus to provide for those infrequent sharp fluctuations in experience that might have occurred during the existence of these coverages but did not—a kind of premium for the temporary protection afforded by the total company's surplus while the policies are in force.

On the other hand, there are perhaps two sides to the question of the appropriateness of a *permanent* contribution to surplus. In contrast to stock insurance companies, in a mutual life insurance company there is no party with a valid interest in the company other than the body of policyholders, with the obvious and trivial exception of the relatively few short-term creditors of the company. Therefore, the notion that surplus is a revolving fund with each generation of policyholders accumulating surplus up through the middle years of their in-force duration, and then having all that surplus returned to them (to the greatest practical extent) by the time that generation goes off the books, has some appeal. The reasons advanced by Mr. Leckie in support of the permanent-contribution-to-surplus theory seem to have equal application to the zero-surplus concept as well. Under both concepts, it is possible for each generation of policyholders to leave the company no worse than when it entered. It should be noted that a company following the zero-surplus approach can structure its asset shares to be in harmony with any reasonable rate of growth, and is not limited to a zero-growth situation.

HENRY B. RAMSEY, JR.:

Mr. Leckie has made a significant contribution to the arsenal of equipment available to cope with the surplus management challenge now facing most mutual companies.

I will limit my comments to the first three sections in Mr. Leckie's paper.

I. *The Rights of Policyholders*

I believe this section does a remarkable job, in a very short space, of analyzing the rights of policyholders in a mutual company. I would strongly recommend this section to the managements of all mutual life insurance companies. In particular, the final paragraph provides an excellent summary.

II. *Size and Purpose of Mutual Company Surplus*

The definitions provided in the beginning of this section are quite helpful in considering surplus questions. I would prefer a slight variation in the definition of *internal liability*, as follows:

The present value, based on appropriate experience assumptions, of future expected benefit payments, dividends, and expenses, less the present value of future premiums.

The appropriate experience assumptions would be such as to generate the "realistic liability" referred to in Mr. Leckie's definition.

While the definition I have suggested might, under most circumstances, produce results identical with those obtained by using the definition suggested by Mr. Leckie, it does recognize that certain experience fluctuations that may have occurred may not be totally recognized in the future expectations under the contract. I believe it is also desirable to be consistent in defining contract liabilities as a function of future expectations.

A preferable term for the accumulated fund might be *internal assets*.

III. *Surplus Targets*

The definitions and formulas developed in this section are very helpful in considering the surplus-growth tension. I have some concern, however, with the basic concept that participating policyholders should make a steady contribution to surplus for the sole purpose of building corporate surplus at a rate sufficient to sustain a particular growth pattern. If surplus earnings are defined to include not only the investment return on surplus funds but also any contributions to surplus from existing business, it is clear that the total growth rate of the company will be constrained to be no greater than the earnings rate on surplus. An approach that reflects that fact but does not require independent contributions to develop surplus at particular growth rates may, however, be developed in the following way.

Surplus is maintained in a mutual company primarily to provide the necessary margins to protect existing business. Since certain lines of business, blocks of business, particular products, and so forth, will have a need for, or develop a supply of, surplus at different rates and at different times, some "borrowing" of surplus among these entities will be necessary in order for the system to operate. (This is recognized by Mr. Leckie in Sec. IV, 3 of his paper.)

Borrowed surplus should be entitled to a reasonable rate of return. Reference may be made to the paper by I. C. Smart, "Pricing and Profitability in a Life Office," submitted to the Institute of Actuaries on January 24, 1977, for an interesting discussion of the earnings rates that should be attributed to such capital investments. For purposes of discussion, let us assume that 10 percent is an appropriate rate of return on borrowed surplus.

If contracts are priced so as to provide a 10 percent return on borrowed surplus (defined as statutory liabilities plus operational surplus, less internal assets), then the rate of return on that surplus would be 10 percent. Returning to Mr. Leckie's formulas, this would permit a growth rate of 10 percent to be sustained with no separate charge for building surplus (the *e* factor described by Mr. Leckie).

Let us look at the situation when internal assets are equal to statutory liabilities. As an example, if the rate of after-tax investment earnings on surplus funds is 5 percent, in order to provide a 10 percent return on surplus it will be necessary for the contract to supplement the investment earnings on surplus by an additional 5 percent. If operational surplus is to be maintained at 5 percent of liabilities, then there will be an additional charge in the pricing equal to the 5 percent additional earnings requirement times the 5 percent surplus requirement, or 0.0025 times liabilities. It is interesting to note that this is the identical result that would be obtained if formula (1) developed by Mr. Leckie were used with the aforementioned assumptions. That is, given an earnings rate on surplus of 5 percent, a growth rate of 10 percent, and a surplus charge of 0.0025, the long-term surplus ratio developed will be 5 percent.

The above discussion is intended to make the point that a similar result can be obtained from two different directions when internal assets equal liabilities. However, internal assets rarely equal liabilities, and whenever they differ the two approaches will provide different pricing results. This seems to me to be a very important distinction. Let us look at a typical pattern for an ordinary life insurance contract that starts with substantial borrowed surplus, ideally generates surplus in excess of that required, and then returns to a zero-surplus position at the end of the contract. During the early years when there is significant borrowed surplus, under the approach I have outlined there would be a charge of some substance to the contract to maintain its borrowed surplus. On the other hand, during the later years, when the contract was providing surplus for use by others, it would be enjoying an additional return, recognizing the fact that the excess funds were being invested on the policyholder's behalf instead of being returned to him currently in the form of dividends. This seems to me to be a much more equitable result than the one produced by a steady charge on liabilities, since it recognizes the extra cost of maintaining needed surplus and rewards the provision of additional surplus.

DONALD R. SONDERGELD:

While reading this paper, I was reminded of the well-known story of the six blind men each of whom had a different idea of what an elephant

was like (a snake, a tree, and so forth). Although my feelings agree with many of the author's, let me comment on the differences I perceive.

First, is it "reasonable that a small, nonrefundable surplus charge be made to the policyholder for his right to be a member of that organization for a limited period of time"? The policyholder is a member after he becomes a member, so the charge is presumably for the right to *remain* a member. But, once you become a member, and, according to some, an owner, should you pay yourself to remain a member? I definitely agree that both the participating and the nonparticipating policyholder should "pay something for the use of someone else's capital," but I am not sure that an additional payment is needed for the right to participate in a going-concern enterprise. However, the thrust of my remarks relates to how I would determine growth rates for a mutual company.

Yes, there should be a nonrefundable surplus charge, which should be determined separately by line of business, plan, and so forth. However, I would suggest a somewhat different method of calculation, and a different interpretation of the charge as one for the use of capital. The charge will also be independent of the growth rate being considered for a particular line of business. Let me provide a brief summary of my general views on nonparticipating insurance, to which these comments apply.

In a stock life insurance company, there is stockholder surplus. This can be invested in securities and earn some rate of interest, i. However, part of this surplus can be "invested" by covering the statutory drain on new business. This new business is priced to yield an internal rate of return (IRR) that is greater than i. The IRR should vary directly with the capital risk associated with the statutory drain. In determining the price and the IRR, I include something like Mr. Leckie's surplus target factor in an Anderson-type formula.[1] The formula on page 375 of *TSA*, Volume XI, defines book profit at the beginning of policy year t. The first and last terms can be *modified* to include a factor for target surplus R:

$$(1 + {}_{t-1}R)({}_{t-1}V) + \ldots - (1 + {}_{t}R)\left(\frac{{}_{t}V}{1 + i_t}\right)(1 - q_t - w_t - c_t) .$$

${}_{t}R$ can be defined as a percentage of liabilities or in some other way. In Mr. Anderson's paper, ${}_{t}R$ was zero.

The resultant profit charge included in a nonparticipating insurance policy should be set to yield an appropriate return on the investment over the life of the policy. In calculating the IRR, the modified formula

[1] James C. H. Anderson, "Gross Premium Calculation and Profit Measurement for Nonparticipating Insurance," *TSA*, Vol. XI (1959).

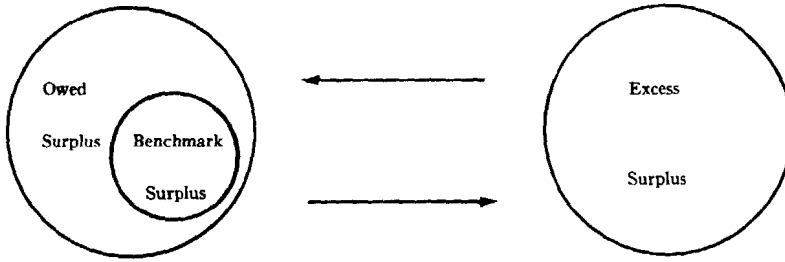
provides that both reserves and target surplus be set up during the life of the policy. When the policy life ends, there is no need for reserves or surplus related to that policy. In what follows, it is assumed that the actual statutory surplus at least equals the target; therefore, I will use the term *benchmark surplus.*

Mr. Leckie discusses dividing surplus into two notional components. I would, in turn, suggest the following surplus accounts:

1. Benchmark surplus (the necessary statutory surplus for each line of business and product).
2. Excess surplus (the excess of actual statutory surplus over benchmark surplus).
3. Owed surplus. (This would be similar to the adjustment made to statutory surplus if generally accepted account principles used in the United States for stock life insurance companies were followed. It consists primarily of prepaid acquisition expense and early policy-year dividends paid before they are truly earned. It also includes benchmark surplus. This is the debt that current policyholders owe.)

Total statutory surplus is equal to the sum of benchmark surplus and excess surplus. The owed surplus account is similar to the IRR method of accounting insurance surplus account described in my paper titled "Earnings and the Internal Rate of Return Measurement of Profit," *TSA*, Volume XXVI (1974).

We then have the following picture relating to a block of business:



$$_t(\text{Owed surplus}) = [_{t-1}(\text{Owed surplus}) - {}_t(\text{Net transfer to excess surplus})](1 + \text{IRR}).$$

When the policies are issued, surplus is transferred out of excess into the owed surplus account. Part of this transfer is included in benchmark surplus. Over the life of those policies, benchmark surplus and the balance of owed surplus is reduced to zero, with transfers back to excess surplus. It would seem to me that managing the growth rate of the company would involve projections of the excess surplus, with the require-

ment that it never become negative; otherwise the total statutory surplus would then be less than benchmark surplus. These projections could be done under various growth scenarios.

Management of the mutual company would ensure that the policyholders received insurance at cost. This cost would include a nonrefundable charge for the use of capital, which could be expressed in different ways, for example, as a percentage of premium or of reserves. Management would act as a trustee regarding the excess surplus.

Assume that we have a mutual company with no insurance on the books and with $10 million of statutory surplus generated by an old block of business. In 1979 it writes a number of individual whole life policies. The statutory drain is $2.9 million, and $100,000 of benchmark surplus is needed. Excess surplus is thus reduced to $7 million. Owed surplus becomes $3 million. Total statutory surplus is now $7.1 million.

Internal performance accounting referred to by Mr. Leckie could be used to determine dividends. That is, the asset shares or funds projected before these policies were issued would have included a charge for benchmark surplus, which would start at zero just before the policy was issued, would be a charge in those years when benchmark surplus was increasing and a credit when benchmark surplus was decreasing, and would end at zero just after the policy terminated. Also, a separate charge would be made against these policies so that an appropriate IRR, greater than i, would be earned on the $3 million of excess surplus invested in this business. The difference between actual and expected experience would be an adjustment to the projected scale of dividends to produce actual dividends.

In my example, the $10 million of excess surplus was generated by an old block of business. Presumably, this is the amount that remained after dividends were distributed to that block of business. Should this be used to increase dividends on new policies? If so, on which ones, and by how much? We read in the paper: "Growth is an integral part of survival and reproduction, which are natural and basic instincts." Then, let us use as much of the $10 million as possible for future growth. Also, let us determine an IRR that is appropriately greater than i, so that the growth rate can be larger than if we set the IRR equal to or less than i. The IRR would probably be less than a stock company would use, since there is less capital risk associated with a participating policy.

It appears to me that many advantages arise from a growing organization. It likely will attract and retain better management and should, through economies of scale, have lower unit costs. In addition, benchmark surplus per unit will be reduced as the business grows. These

factors will be beneficial to the policyholders. However, if part of a mutual company's excess surplus is used to write nonparticipating business, I question whether the profit should accrue to the participating policyholders. The capital comes from excess surplus, not from the policyholders. Policyholders are borrowers, not lenders. Such profits could be used to finance growth. If profits from nonparticipating ordinary life arose, would they be distributed to all participating policyholders (individual life, group insurance, health insurance, and group annuity) or only to those participating policyholders with individual life policies? If excess surplus is invested in securities, and earnings are not distributed to participating policyholders, should the earnings resulting from an investment of part of this excess surplus in nonparticipating business be distributed to participating policyholders? I suspect that there is quite a variance between theory and practice regarding rights of ownership and equity relating to excess surplus.

Perhaps, in the example I have used, a growth goal could be defined in terms of maintaining the sum of excess surplus and owed surplus at (*a*) $10 million or (*b*) $10 million accumulated at i or (*c*) owed surplus on various blocks of business accumulated at appropriate IRRs and excess surplus accumulated at i. It would seem that *a* is too small, as this, in effect, means the interest earned on the $10 million is being distributed to current and new generations of policyholders. It would appear that *b* is a minimum level for the sum of excess and owed surplus. However, since there is some risk relating to the investment of this excess surplus, *c* would be my selection. Not only is this choice equitable, but it provides for faster growth.

DONALD D. CODY:

In his fine paper, Mr. Leckie very generously referred to my discussion note in *Record*, Vol. III (No. 1), regarding surplus quantification. I think it might be helpful to outline how the procedures of the note have been used at New England Life to develop figures to accomplish some of Mr. Leckie's objectives.

An adverse experience surplus need (AESN), expressed as a percentage of liabilities, is determined by combining appropriately surplus needed for (*a*) asset losses in a chosen severe "stagflation" episode, (*b*) correlated capital losses from disintermediation, (*c*) correlated disability losses, (*d*) adverse death claim losses by a ruin-theory approach, and (*e*) miscellaneous risks such as earthquake losses. AESN is developed by major lines and products. It is Mr. Leckie's operational surplus and represents the surplus capacity already utilized by in-force business.

The balance of the surplus of the company (or line) is called capital investment surplus (CIS), which is Mr. Leckie's development surplus. The contribution of each line to CIS in a calendar year is the net income of the line, including its share of capital gains or losses, minus the change in AESN for the line. The AESN and CIS can be projected to enable a choice to be made among alternative decisions in a business plan for the future. This latter step has yet to be accomplished.

To control the approach to a long-range goal for surplus in the ordinary line, we have introduced a generalized contribution formula dividend scale with surplus goals explicitly contained in the formula. This formula is based on the generalized equation of equilibrium underlying the Gain and Loss Exhibit on Page 5 of the Annual Statement, with factors directly related to Page 5. Simply stated, this formula consists of the usual three-factor-formula loading, interest, and mortality items, plus a factor for gains or losses on surrenders, plus a surplus charge factor.

The surplus charge factor first amortizes issue expenses on a controlled basis, then makes charges for surplus development, and finally retains aggregate dividend surplus with interest at the target level. The surplus is developed from a deficit at issue to its ultimate value at termination of the last policy in the class by a separate formula that accumulates the surplus charges.

I expect that Mr. Leckie's elegant concepts as to the interrelationship of long-range surplus objectives and growth will be helpful in the ongoing development of this structure, particularly in the manner in which our expenses and expense matrices are managed.

(AUTHOR'S REVIEW OF DISCUSSION)

ROBIN B. LECKIE:

I would like to thank all those who have discussed this paper. The contributions have been constructive, leading to a better understanding of the concepts presented in the paper, as well as identifying the areas that require further development and discussion within the profession.

Although I will not attempt to respond to all the points raised in the discussion, I will try to comment on differences of viewpoints or understanding. Since the paper is fairly broad and the discussion far-reaching, I have organized this response by subject matter.

I. *Policyholder Rights*

A. CORPORATE STRUCTURE AND GROWTH

It is apparent that there is no unanimity on (1) the nature of a mutual company, (2) the rights of policyholders (particularly their rights to

existing surplus), (3) the objectives and motivation of the company and management, and (4) the demutualization or windup of a mutual company. The paper attempted to set forth a general framework within which reasonable conclusions could be reached. I did not feel constrained by conventional wisdom or existing laws and regulations; rather, the framework was based on first principles, in a form to provoke discussion and further development. In this endeavor the paper has been successful.

While many of the discussants have supported the general conclusions of the paper with regard to the first three points, a few have objected. Mr. Paquin argues for an examination of mutual companies as an extension of the cooperative movement. I do not disagree, although I cannot agree with his premise that there is no need for surplus and that the company should not have the desire or need to grow. Mr. Paquin has concluded that the theory of the paper supports the principal objective of survival of the organization for its own sake. I do not know how he came to this conclusion, for I agree, and thought I had indicated, that the objective and purpose should be exactly as stated in Mr. Paquin's concluding sentence: "The members *are* the management, and serving the members' insurance needs is the objective." Perhaps the paper's emphasis on avoidance of the possible misuse of that objective was what led Mr. Paquin to his conclusion.

Mr. Newton does not believe that surplus should be accumulated for development or growth. He states that "the *discovery* by management of excess surplus derived from matured policyholders does not create a separate fund for the use of management but creates an obligation on the part of management to current policyholders. There can be no obligation to future policyholders who have not yet chosen to acquire rights in the mutual insurer." I doubt that there are many instances of a "discovery by management" of excess surplus. If surplus is found to be excessive, on the basis of a current evaluation of risks and corporate requirements, there is an obligation on the part of management for the proper use of that surplus in financing and maintaining the organization and in the equitable distribution of operational performance. The first part of this obligation applies not only to current policyholders but also to all future policyholders.

Mr. Kayton objects to the view of a mutual company as a kind of trust fund, for fear that this could result in the perpetuation of poorly managed mutual companies. He contends that surplus belongs to the policyholders, with an interest proportional to their prior contributions and with that interest terminating on termination of the policy. This conclusion would appear to differ from that in the paper only with respect

to actions that policyholders might take collectively to obtain access to existing surplus—for example, windup of the company, merger, or demutualization.

B. WINDUP

Several discussants join Mr. Kayton in objecting to the idea that any surplus remaining on windup should go to the state or to insolvency funds. I appreciate that the paper's position on windup is rather provocative; it is, however, rather academic in practice. I do not believe that one can extrapolate from that position the conclusions reached by some of the discussants. I accept that the paper's position is somewhat unsatisfactory, but I do not see a more satisfactory proposal being put forth. In particular, I stick by the contention in the paper that "policyholders should not benefit from or be hurt by unusual situations" such as their decision to wind up an active operation.

C. DEMUTUALIZATION

Two discussants (Bowles and Gill) have objected to the paper's position on demutualization—primarily because the principles are inconsistent with current state law.

The paper does not profess to be a legal paper; if it were, it would be sadly lacking. Rather, an overall framework has been constructed within which the reasonable rights and expectations of participating policyholders of mutual companies might be met. No attempt was made to check whether suggested policyholder rights presented in Section I or in Section VI, "Merger, Acquisition, Divestment, and Windup," would be consistent with state laws, federal United States laws, Canadian laws, or, for that matter, the laws of any country. Some of the statements in the paper are too emphatic, and those in opposition to existing state law are not warranted without at least some qualification. However, I disagree with Mr. Bowles as to what is legal and what is actuarial. Obviously the laws of the land must govern in individual instances between companies, between a company and the government, and between a policyholder and a company. Thus, in a specific situation of corporate change, or a policyholder's suit, it is right and necessary to look to the law. However, in determining what should be in the law or how laws might be amended in the future, it is necessary to examine the principles involved in conjunction with current situational factors.

Mr. Bowles suggests that I should "seek to change the law." Frankly, I do not know whether this is necessary. However, the paper does encourage a discussion of the principles involved so that the actuarial considerations can be in harmony with the laws and regulations, if they are

not so already. It is quite possible that laws now in place were written to meet specific situations and were not necessarily founded on a general framework of well-considered policyholder rights and interests in a mutual company.

Mr. Gill takes exception to a number of the paper's statements on demutualization. He has substituted fact for impression—the fact that there have been approximately one hundred demutualizations of life companies against my impression that it was fairly rare. Mr. Gill justifies demutualization under certain situations and for certain reasons, and I concur with the points made. However, his process bothers me, even though it may be justified by state law, because it gives to existing policyholders and some prior policyholders the right to a distribution of surplus to which they would have no access otherwise, and to which they have made only a minor contribution. I believe the proposed demutualization as presently set out by some states should be reexamined within an acceptable context of mutual companies and their ownership.

D. MERGER

Mr. Maynard feels that the paper overemphasizes the policyholders' interest in the target surplus rather than the existing surplus. His point may be well taken in the case of a merger. As Mr. Tookey points out, detailed records of target surplus levels, surplus charges, and so forth, may not be readily available, and therefore the approach may be more theoretical than practical. Mr. Tookey goes on to state that, even though there are compelling reasons for mutual companies to merge (and this author strongly concurs), the task is virtually unaccomplishable. The "engagement" referred to in Mr. Tookey's discussion has since been terminated.

II. *Surplus*

A. TARGET SURPLUS VERSUS CURRENT SURPLUS

Much of the paper is devoted to the development of the target surplus concept as a tool for surplus maintenance. Some of the discussants have had difficulty in grasping the distinction between target surplus and current surplus and therefore in accepting the conclusions that derive from the target surplus concept.

A proper surplus management or maintenance program must take into consideration the current surplus level and, if based on the principles in the paper, an ultimate target level. In fact, most companies are more likely to consider a short-term objective, say a surplus level desired ten years hence.

"Target surplus" is a highly theoretical concept, useful in formulating a general surplus maintenance program and in establishing a means to move from the current surplus level to a desired surplus level in conjunction with a given growth pattern. It provides the charge needed to support or move toward that target surplus.

Messrs. Reed and Cole are bothered by the paper's statement that the surplus charge for the "maintenance" of the target surplus is independent of the current surplus. Mr. Cole points out, and I agree with him, as I believe I did in the paper, that statutory provisions must be considered in maintaining surplus levels. Thus, as current statutory surplus approaches the lower or upper limits of acceptability, management must take action. Mr. Reed implies that most mutual company managements are more likely to look at current surplus levels or short-term target surplus requirements (say five to ten years) in developing their pricing and distribution policies than to use anything as theoretical as target surplus. He is probably correct. However, he is in error when he says that only nonparticipating policies are in a category such that their target surplus contributions will not be affected by actual emerging experience. As he points out, any difference between actual and expected experience will alter the surplus contribution. However, for participating policies, the target contribution can be fixed, with any difference between actual and expected returned to policyholders as dividends.

Both Messrs. Reed and Cole have pointed out that target surplus can never be mathematically reached; it can only be approached. Mr. Henricks has carried out a mathematical demonstration and included tables showing that the convergence from current surplus to target surplus is indeed very slow.

The author contends that the target surplus concept is a useful means of developing a consistent long-term policy within which management can govern the company while recognizing the equitable interests of all policyholders. The theoretical charge can be set to be relatively unchanged over time. At the same time, current surplus levels must be adequate and there will be occasions when additional charges or lesser charges should be set to meet immediate needs. Growth can also be adjusted to meet surplus requirements. Furthermore, as Messrs. Garfin and Trowbridge have pointed out, practical pricing and reasonable equity to policyholders can be achieved through surplus charges that vary within a range, the position within the range being dependent at any given time on the current surplus situation and competitive factors. Inflation, too, will be a factor; however, frequent changes in the surplus charges should not be made for this reason.

B. MAINTENANCE OF SURPLUS—PERMANENT CHARGE VERSUS REVOLVING SURPLUS

The paper develops a theory of surplus management based on a permanent charge from participating policyholders for the maintenance of a required surplus. Only a casual reference is made to the revolving surplus concept used by some mutual companies. This omission should not be taken as either a dismissal of the revolving surplus approach or an implication of the inferiority of the approach. I would like to thank Mr. Sarnoff for raising the distinction between the two approaches. I concur with his conclusions.

There is a need to examine properly both the characteristics of and the distinctions between the revolving surplus and permanent charge approaches. I believe this evaluation would support many of the conclusions in the paper regarding the "ownership" rights of policyholders. Although the two approaches have very definite practical differences, conceptually they seem very similar, if not identical, and the policyholders' net returns under the two methods can, with minor variations, be virtually identical.

Those companies operating under a revolving surplus concept appear no different on the surface from those operating under a permanent charge concept. The size of surplus relative to liabilities, and the growth rates in the companies, tend to be quite similar. And yet the revolving surplus concept is predicated on the assumption that at any given point in time the surplus consists solely of the temporary holdback from current policyholders, while the permanent charge theory states that surplus consists primarily of contributions made by prior generations of policyholders plus a very small contribution made by the current generation of policyholders. What, then, is the distinction? Is there a much larger holdback under the revolving surplus concept and thus an indirect charge through the loss on the use of money? Is the difference the (uncalculated) value to current policyholders of having large surplus funds on hand in support of and protecting current policyholders? These questions warrant actuarial study. In the aggregate, two companies with identical surplus ratios at the beginning and end of a period, identical growth rates during the period, and identical operational performance during the period must have identical net returns to policyholders. Yet if one company operates under a revolving surplus concept, there is, by definition, no charge for surplus, while another company operating under a permanent charge concept would, by definition, be adding something to surplus. The author contends the two approaches are in fact virtually identical so far as any surplus holdback is concerned.

Mr. Newton refers to the reversionary bonus system used in the United Kingdom as a system geared to providing ongoing actuarial equity. In fact, the system is a special form of the revolving surplus approach (Mr. Newton refers to a refundable charge). I do not see this approach as facilitating equity, but quite the opposite. It has the same fault that prevails in North America and to which the paper has taken exception—namely, it aggregates operational performance (mortality, interest, expenses, persistency, and so forth) with corporate maintenance (growth rates, mix of business, size of surplus, and so forth).

The author prefers the approach of making a small specified charge for corporate maintenance, thereby isolating the balance of earnings as a measure of operational performance and divisible surplus.

C. CHARGE TO MAINTAIN SURPLUS

Some companies have adopted what they call an "entrepreneurial return" for surplus. Products or divisions requiring surplus for growth, development, or other purposes must pay a return on that surplus corresponding to the risk or opportunity cost. Mr. Ramsey's discussion sets out one such approach for a mutual company, and Mr. Sondergeld describes an approach for a stock company. Either of these approaches can be used in conjunction with the formulas in the paper.

A special situation arises where the surplus return required is equal to the company's liability growth rate. In this case, the application of the formulas in the paper produces a zero charge for the maintenance of surplus. However, a simple mathematical demonstration will show that the portfolio rate of interest on the liabilities will be lower than the rate on assets by an amount exactly equal to the surplus charge that would have been required had surplus been earning interest at the portfolio rate. This is as would be expected and shows the equivalence of the two approaches.

Mr. Cody briefly sets out the surplus maintenance approach adopted by his company. It will be noted that a portion of the surplus is equivalent to the paper's development surplus—the portion of surplus in excess of that required for specified contingencies and therefore available to finance new growth. Several discussants objected to the concept of a development surplus either because they felt that growth was not justified or because the fund might be mismanaged. The author believes that growth can be justified, within limits, and that it is incumbent on management to see that dollars to finance new business are used soundly.

Messrs. Trowbridge and Garfin ask how to handle differing growth rates or surplus requirements equitably by line of business. Also, there is

the question of special assessments should statutory surplus require bolstering. Their question implies its own answer. A company may adopt an exact approach to each line as though the line were a separate business, say, by using the "entrepreneurial return" approach. Or the company may choose to consider some subsidization or financing from special corporate funds (the development surplus). I prefer this approach, provided that it is a conscious decision by management with recognition of corporate philosophy, competitive factors, and reasonable internal equity.

III. *Other*

A. NONPARTICIPATING BUSINESS

Messrs. Garfin, Paquin, Tookey, and Trowbridge have all commented on or questioned the wisdom of mutual companies writing nonparticipating business. There seems to be a concern for the risk involved and the distinctions between the interests of policyholders and those of members. The author contends that the risks are minimal, certainly no greater than those of the investment all mutual companies make in equities, and that performance can be followed through a proper separation of accounts. The interests of nonparticipating policyholders are defined by their contracts, and participating members will share in all operational profits not required to support surplus.

Most Canadian mutual companies write nonparticipating life business, although it is quite unusual for a United States mutual to do so.

B. RATE OF GROWTH OF INTERNAL LIABILITIES

The paper states that internal liabilities generally will grow at a slower rate than statutory liabilities. However, as Mr. Trowbridge suggests, the rate of growth over a long period is probably similar to that for statutory liabilities. The author had looked at some actual figures for the last four years; however, this was not a typical period because of the rapid growth of annuity business. In general, internal liabilities increase more slowly when interest rates are rising or growth is accelerating.

C. PURPOSE AND SIZE OF SURPLUS

Mr. Trowbridge refers to the current activities of the Committee on Valuation and Related Problems and their efforts to isolate the reasons for, and size of, surplus. The committee has made considerable progress, and it is hoped that some of the concepts of this paper will assist the committee in its further work.

D. OPERATIONAL PERFORMANCE

Some of the discussions appear to imply that the general principles in the paper, particularly those related to target surplus, are too theoretical,

thus obscuring the basic objective of mutual companies—to provide favorable operational performance. The purpose of the paper was just the opposite—namely, to set out a framework in which to compartmentalize the several characteristics of a mutual company, including (1) the size of surplus, (2) the cost to maintain surplus, (3) the cost of growth, (4) distinctions by product line, (5) nonrecurring and unusual profits and losses, and (6) operational performance. Management, acting as trustees for the members, has an obligation to provide the greatest service for the least cost, with due consideration of the risks involved and the need to ensure that future expectations will be met. Thus, good operational performance *must* be the key objective of management, and this can be both planned for and monitored more effectively when there is an appreciation of the impact of the other "compartments."